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U. S. NAVAL TECHNICAL MISSION TO JAPAN
CARE OF FLEET POST OFFICE
SAN FRANCISCO, CALIFORNIA

27 December 1945

RESTRICTED

From: Chief, Naval Technical Mission to Japan.
To : Chief of Naval Operations.

Subject: Target Report - Japanese Land-Based Radar.

Reference: (a)"Intelligence Targets Japan" (DNI) of 4 Sept. 1945.

1. Subject report, covering Target E-03 of Fascicle E-1 of reference (a), is submitted herewith.

2. The investigation of the target and the target report were accomplished by Lieut. W. G. Lamb, USNR, assisted by Lieut. E. E. Schwalm, USNR, and Lt.(jg) S. H. Kadish, USNR, as interpreter and translator.



C. G. GRIMES
Captain, USN

32409

RESTRICTED

E-03

JAPANESE LAND-BASED RADAR

**"INTELLIGENCE TARGETS JAPAN" (DNI) OF 4 SEPT. 1945
FASCICLE E-1, TARGET E-03**

DECEMBER 1945

U.S. NAVAL TECHNICAL MISSION TO JAPAN

SUMMARY

ELECTRONICS TARGETS JAPANESE LAND-BASED RADAR

Japanese land-based radar is discussed in general, and a brief description of each of the more important equipments is given. Enclosures (C) to (J) are diagrams of selected sets that can be considered typical.

As shown in Enclosure (K), "Summary of Land-Based Radar," the development of the first Japanese radar was completed late in 1942. The search-light control radar was undoubtedly based on captured British equipment and the AA fire control models were designed from captured American sets. It was stated that although no equipments were direct copies of German designs, valuable assistance and suggestions were obtained from German technical personnel.

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INTRODUCTION

This report covers Japanese land-based radar in use at the end of the war. Experimental and developmental equipments are described in NavTech Jap Report, "Japanese Experimental Radar", Index No. E-12.

The information and conclusions are based upon interrogation of Japanese naval and technical personnel and the inspection of equipment, installations, and experimental facilities.

REFERENCES

Location of Target:

Navy Yard, SASEBO.

Anti-aircraft installations on the islands of KYUSHU and HONSHU.

Navy Yard, YOKOSUKA.

Second Naval Technical Institute, KANAZAWA.

Second Naval Technical Institute, Meguro Branch, TOKYO.

Naval Fighter Director Station, CHIGASAKI.

Naval Radar School (Aircraft), FUJISAWA.

Japanese Personnel Interviewed:

As listed in Enclosure (A).

THE REPORT

Part I - GENERAL

Japanese land-based naval radar can be divided into five groups:

- a. AA Early Warning 2 to 6 meters.
- b. Surface Warning 10cm.
- c. Searchlight Control 1.5 meters.
- d. AA Fire Control 58cm to 1.5 meters.
- e. Direction of Friendly Craft 60cm to 2 meters.

All of these radars followed a definite design pattern; the equipments consisted of separate units, usually performing the following functions:

Synchronizer (often combined with Range Unit)
Indicator
Range Unit
Receiver
Modulator
Transmitter
Antenna
Lobe Switcher (when required)
Power Supplies and Voltage Regulators.

Most of these equipments operated on a fixed pulse repetition rate controlled by a low frequency oscillator in the synchronizer unit. This oscillator also acted as a time base for the range measuring circuits and its frequency was determined by a tuning fork, crystal, or high Q LC circuit. Conventional wave forming circuits were used in the indicators to produce linear, logarithmic, and sinusoidal sweeps. The technique of data presentation was not developed to a very high degree. "A" scans were used for search and range indication. Where better accuracy of range measurement was desired, an expanded sinusoidal sweep was employed. Pip matching was used for bearing and elevation indication in systems with lobing antennae; maximum echo determined bearing in systems without lobe switching. In conical scan systems, bearing and elevation were indicated by a variation of the moving spot type indicator. A pattern appeared on the cathode ray tube to indicate an error in bearing or elevation, and when this error had been corrected, the pattern closed down to a single spot centered on the tube face. No "B" scans or PPI indications were used on land-based naval radar. Range marks were applied to the "A" sweeps either as equally spaced pips or as a single movable mark. Inductive phase shifters operating from the synchronizing oscillator provided the time delay circuits for the range units where movable range marks were used.

The receivers were of conventional design with double or single IF sections. Intermediate frequencies in use ranged from 200 kc to 21.5 mc. In general, the band width was equal to the reciprocal of the pulse length. This would give band widths of from 50 kc to 400 kc.

Grid modulated transmitters were generally preferred in view of the low modulator output required and the ease of synchronizing. The oscillators were of from one to four tubes tuned by parallel lines or LC circuits, or magnetrons for micro-wave equipments.

Antenna design showed no advanced techniques. This was at least partially due to the indication systems employed, as none of them called for narrow beam widths or rapid scanning antennae. YAGI arrays were very popular, especially

where weight and ease of assembly were factors of importance. Large bedspring arrays were used for important long-wave early warning radars. Separate antennae for transmitting and receiving were used by most of these equipments although recent designs and experimental equipments showed a marked trend toward the use of a single antenna and duplexing system. Lobing was accomplished either by contact, capacity, or inductive switching, with contact switching being preferred especially where only the receiving antenna was lobed.

Direction of friendly craft, air and surface, was in a state of development at the end of the war and is treated in NavTechJap Report, "Japanese Experimental Radar," Index No. E-12. There were two methods in use: a 1.5 to 2 meter radar that operated in conjunction with the M-13 IFF, and a 60cm conical scan radar.

One of the outstanding features of Japanese radar equipment was the avoidance of designs that required precision work in production; this was especially true of the antennae. Simplicity of design not only made it possible to produce the equipment with untrained labor but also facilitated repairs in the field. It is doubtful, however, that this would have been possible had more advanced techniques been developed. Although the Japanese were theoretically qualified to produce modern radar equipment, production difficulties, lack of adequate test equipment, and the absence of creative imagination resulted in models that compare with American equipment of 1942.

A short description of each of the more important land-based radar equipments follows.

Part II - AA EARLY WARNING RADAR

A. Mark 3 (RD), AA Early Warning Radar

Wavelength	5 meters
Peak Power Output	500 Watts
Wave	Continuous
Oscillator	Crystal Controlled
Amplifier	RF Power

The development of this radar was completed late in 1942. A few installations were made but the operation was generally unsuccessful and the project was abandoned.

B. Mark 1, Model 4 (14). (See Enclosure C)

Wavelength	6 meters
Peak Power Output	100 kw
Pulse Length	20 micro seconds
Pulse Repetition Rate	250 cps.
Oscillator	Push-Pull, back coupled, parallel wire tuned.
Antenna	Single, for transmitting and receiving.

This is the most modern of the long wave AA early warning radars, the development having been completed in June 1945. The antenna is a large structure 6 meters wide, 7 meters high, and 4.7 meters deep. It is composed of four, two-element, half-wave Yagis with a similar array of full wavelength behind it acting as a parasitic reflector. The scope presentation was of the "A" type, maximum echo being used for bearing determination.

C. Type 2, Mark 1, Model 1, Modifications 0, 1, 2, and 3 (11, 11-1, 11-2, and 11-3). (See Enclosure D)

Wavelength	3 meters
Peak Power Output	
Modification 0	5 kw

Modification 1	5 kw
Modification 2	40 kw
Modification 3	40 kw
Pulse Length	20 micro seconds
Pulse Repetition Rate	
Modification 0	1000 cps
Modification 1	1000 cps
Modification 2	500 cps
Modification 3	500 cps

This is one of the most widely used AA early warning radars; an early model was known as the Guadalcanal Type. The first of these was completed early in 1942 and minor modifications in design were made shortly thereafter. A major redesign was completed about the middle of 1943 and was designated "Modification 2." This redesigned equipment was more ruggedly constructed and had considerably more power output. Modification 3 is similar to Modification 2, but has a few minor improvements. The appearances of the 11, 11-1, 11-2, and 11-3 were similar, being a pair of antennae on a large screen, 8 meters by 5½ meters, mounted along with the control room on a rotating structure. An "A" type presentation is used with maximum echo for bearing indication.

D. 11-3-Kai (See Enclosure D)

Wavelength	3 meters
Peak Power Output	40 kw
Pulse Length	20 micro seconds
Pulse Repetition Rate	500 cps
Antenna	Single, for transmitting and receiving

This radar was a redesign of the Type 2, Mark 1, Model 1 series and although completed in June 1945, it was not yet in use. Although a single antenna was used for transmitting and receiving, lobing in the horizontal plane was employed only while receiving. The accuracy in bearing was stated to be plus or minus 10°. It was further stated that the single lobe (when transmitting) allowed better frequency stability and also that some difficulty was experienced in building a high power lobe switcher. This equipment is similar in appearance to the 11 series, the antenna and control room being mounted on a rotating structure. Three indicators were used: "A" scan for warning, pip matching for bearing, and an expanded sinusoidal scan for range.

E. Type 3, Mark 1, Model 1 (11-K). (See Enclosure E)

Wavelength	2 meters
Peak Power Output	10 kw
Pulse Length	20 micro seconds
Pulse Repetition Rate	500 cps
Antenna	Single, for transmitting and receiving.

This was a medium size AA early warning radar designed for shore installations. The antenna was composed of an array, 5 dipoles high and 4 wide, on a rotating structure. The control room and units of the equipment are usually installed underground adjacent to the antenna. "A" type indication is used with maximum echo indication for bearing.

F. Type 3, Mark 1, Model 3 (13). (See Enclosure F)

Wavelength	2 meters
Peak Power Output	10 kw
Pulse Length	10 micro seconds
Pulse Repetition Rate	500 cps
Antenna	Single, for transmitting and receiving.

This is one of the more Popular AA warning radars, being light weight and

easily installed. An "A" type indicator was used with maximum echo indication for bearing. Although the design of this radar was completed in October 1943, a considerable quantity was found in storage and installed on land and on shipboard.

G. Type 2, Mark 1, Model 2, Modifications 0, 2, and 3. (See Enclosure G)

Wavelength 2 meters (modification 0 - 1.5 meters)
 Peak Power Output 5 kw
 Pulse Length 10 micro seconds
 Pulse Repetition Rate 1000 cps (modification 3 - 500 cps)
 Antennae Separate, for transmitting and receiving

This is a light weight, low power, mobile equipment. Modification 2 employed a duplexing system to allow the use of a single antenna for transmitting and receiving, but this was evidently unsatisfactory as recent drawings have been revised to show two separate antennae. This equipment was very similar to and uses a number of units common to the Type 2, Mark 2, model 1, a shipboard radar. "A" type indication and maximum echo for bearing is used.

H. Mark 6, Model 3 (63)

Wavelength 3 meters
 Peak Power Output 40 kw
 Pulse Length 20 micro seconds
 Pulse Repetition Rate 416.7 cps
 Antenna Single, for transmitting and receiving.

An experimental radar with broad band antenna. This radar is described in NavTechJap Report, "Japanese Experimental Radars," Index No. E-12.

Part III - SURFACE SEARCH RADARS
 (HARBOR AND SHORE PROTECTION)

These radars were designed primarily as shipboard equipments. The basic characteristics are listed here for reference; a more detailed description will be found in NavTechJap Reports "Japanese Submarine and Shipboard Radars", Index No. E-01, and "Japanese Experimental Radar", Index No. E-12.

Mark 2, Model 2 Modifications 1, 2, 3, and 4 (22-kai 1, 2, 3, 4)

Mark 3, Model 1 (220)

Mark 3, Model 2 (32 or 10582)

Wavelength 10 cm
 Peak Power Output 2 kw (22-kai 1-500w)
 Pulse Length 10 micro seconds
 Pulse Repetition Rate 2500 cps (22-kai 3-600 cps)

Part IV - SEARCHLIGHT CONTROL RADAR

Mark 4, Model 3 Modifications 0, 1, and 2 (L₁, L₂, L₃) (See Enclosure G)

Wavelength 1.5 meters
 Peak Power Output
 L₁ 7 kw
 L₂ 10 kw
 L₃ 13 kw
 Pulse Length
 L₁ 4 micro seconds
 L₂ 3 micro seconds
 L₃ 3 micro seconds

Pulse Repetition Rate 1000 cps
 Antenna Separate, for transmitting and receiving

The transmitting antenna and the bearing and elevation indicator were mounted on a searchlight controller. The receiving antenna, composed of four Yagis, lobeswitcher, transmitter, and transmitter power supply, are mounted on the searchlight which is servo-operated from the controller. The other units were usually installed underground nearby. The later models of this equipment employed an "A" scope for search, an expanded "A" sweep for range, and an indicator similar to the moving spot scope for bearing and elevation. It was stated that accuracies of plus or minus 1.5° were obtained in bearing and elevation. This equipment was probably copied from an early British design.

Part V - AA FIRE CONTROL RADAR

A. Mark 4, Model 1 (S3). (See Enclosure)

Mark 4, Model 2 (S24). (See Enclosure)

Wavelength	1.5 meters
Peak Power Output	13 kw
Pulse Length	3 micro seconds
Pulse Repetition Rate	1000 cps
Antennae	separate

These two radars were quite similar, the S3 has three antennae; one for transmitting and one for bearing. It was very similar to the U antennae, one for transmitting and one for the receiving antennae. Accuracies of plus or minus 1° can be expected in both bearing and elevation. An "A" scope was used for matching was used for bearing and elevation

difference being in the antennae. S3, one for elevation, and one Army SCR286. The S24 has two antennae. Lobing is employed on S3. minus 1° can be expected in both bearing and elevation, and pip

B. S8A

Wavelength	58 cm
Peak Power Output	6 kw
Pulse Width	2.5 micro seconds
Pulse Repetition Rate	3750 cps

S8B (Mark 6, model 1)

Wavelength	60 cm
Peak Power Output	10 kw
Pulse Width	2.5 micro seconds
Pulse Repetition Rate	1000 cps

These two radars are experimental conical scan equipments and are treated in detail under NavTechJap Report, "Japanese Experimental Radars," Index No. E-12.

Part VI - RADAR FOR DIRECTION OF FRIENDLY CRAFT

A. Mark 6, Model 2 (62)

Wavelength	2 meters
Peak Power Output	10 kw
Pulse Length	10 micro seconds
Pulse Repetition Rate	500 cps
Antenna	single

B. TH

Wavelength 1.5 meters
Peak Power Output 13 kw
Pulse Length 6 micro seconds
Pulse Repetition Rate 1000 cps
Antenna single

These two radars were used in conjunction with the M-13 IFF for direction of friendly craft. A broad band antenna was used to allow reception on a slightly different frequency from that of transmission. These radars are described in NavTechJap Report, "Japanese Experimental Radars," Index No. E-12.

ENCLOSURE (A)

LIST OF PERSONNEL INTERVIEWED

* * * * *

I.U. - Imperial University
 E.E.S. - Electric Engineering Section
 C.E.S. - Chemical Engineering Section
 S.S. - Science Section

* * * * *

<u>Name</u>	<u>School and Year of Graduation</u>	<u>Specialties</u>
Vice Adm. T. NAWA	Tokyo I.U.(E.E.S.)1917 Studied Chemistry in Tokyo I.U.(S.S.)1919-1922	Chief of the Radar and Communication Department.
Capt. N. TAKAHARA	Naval Academy 1919 Tohoku I.U.(E.E.S.)1932	Head of Fourth Section (radar inter- ceptor, radio beacons & dir. find.)
Capt. & Dr. Y. ITO	Tokyo I.U.(E.E.S.)1924 Technische Hochschule Dresden, Germany 1927	Head of First & Sec- ond Section (Funda- mental researches)
Capt. (Tech) Y. YAJIMA	Tohoku I.U.(E.E.S.)1924	Secretary to T. NAWA Head of Production Section.
Capt. I. ARISAKA	Naval Academy 1923 Tohoku I.U.(E.E.S.)1934	Head of Third Section of Communication Dept. (Radio equip.)
Capt. K. NAGAI	Naval Academy 1924	Member of Adminis- tration Dept.
Lt. Comdr. (Tech) T. HYODO	Tokyo I.U.(C.E.S.)1936	Researcher on Mater- ials and Components for High Frequency Use.
Lt. Comdr. (Tech) S. KATSURAI	Tokyo I.U.(E.E.S.)1936	Researcher on Land and Airborne Radars (Type 51, 61, 63).
Lt. Comdr. (Tech) S. MORI	Tokyo I.U.(E.E.S.)1937	Researcher on ship- borne radar(cm. wave; viz. 22)
Lt. Comdr. (Tech) H. TSUJITA	Kyoto I.U.(S.S.Physics) 1936	Researcher on air- borne radar (meter wave, i.e. FY-3, FH-1, FK-4, H-6).
Lt. Comdr. K. KAMIYA	Tohoku I.U.(E.E.S.)1936	Researcher on com- ponents and tubes for high frequency.

ENCLOSURE (A), continued

<u>Name</u>	<u>School and Year of Graduation</u>	<u>Specialties</u>
Lt. Comdr. (Tech) O. OKAMURA	Tokyo I.U.(E.E.S) 1940	Researcher on tubes for cm. wave.
Lt. Comdr. S. MATSUI	Naval Academy 1934 Osaka I.U.(S.S.Physics) 1942	Head of Research in Yokosuka Branch (research on installation of ship-borne and land based radio and radar).
Lt. Comdr. (Tech) W. SUGIYAMA	Waseda University(E.E.S.) 1940	Researcher on high frequency cable in Yokosuka Br.
Lt. (Tech) K. OGATA	Tohoku I.U.(E.E.S.)1941	Researcher on land based radar (cm. wave; viz. 61)
Lt. (Tech) S. KAWAZU	Tokyo I.U.(E.E.S.)1941	Researcher on land based radar (meter wave i.e. 14,62).
Lt. (Tech) S. YAMANE	Kyoto I.U.(E.E.S.)1942	Researcher on airborne radar, counter measures.
Lt. K. MORI	Naval Academy 1940	Teacher in Radar Training School.
Dr. K. TAKAYANAGI	Kuramae Tech. College 1921	Consultant to T. NAWA, Head of Third Section (Radar)
Eng. H. SHINKAWA	Waseda University 1933 (E.E.S.)	Researcher on radars (meter wave i.e. L-2, L-3, S-3, S-24, N-6, M-13)
Eng. M. HACHIYAMA	Tokyo I.U.(S.S.Physics) 1933	Researcher on high frequency circuits for cm. wave.
Eng. S. SUZUKI	Tokyo Physical School 1929	Researcher on airborne (meter wave N-6)radar.
Eng. K. UEMINAMI	Washington University U.S.A. 1934	Researcher on airborne radar interceptor and shipborne direction finder.
Mr. B. KIMURA	Waseda University 1930	Consultant to H. TAKAHARA (researcher of radio freq. instruments in Electro Technical Laboratory of Japanese Government).

ENCLOSURE (A), continued

<u>Name</u>	<u>School and Year of Graduation</u>	<u>Specialties</u>
Mr. S. NISHIYAMA	Uta University 1932	Interpreter (had no relation to Second Nav. Tech. Inst. up to the end of the war; belongs to Electro. Tech. Lab. of Japanese Government)

ENCLOSURE (B)

LIST OF DOCUMENTS FORWARDED TO WDC THROUGH ATIS

<u>NavTechJap No.</u>	<u>ATIS No.</u>	<u>Title</u>
ND21-6073	3328	Instruction Book, Temp. Desig. Mark 1 Radar
6074	3329	Modification and Repair, Temp. Desig. Mark 1 Radar
6075	3330	Instruction Book, Temp. Desig. Type 3, Mark 1, Model 1 Radar
6076	3331	Installation Reports, Temp. Desig. Mark 1, Model 1 Radar
6077	3332	Installation Instructions, Temp. Desig. Mark 1, Model 1 Radar
6079	3334	Installation Modifications, Temp. Desig. Type 3, Mark 1, Model 1 Radar
6080	3335	Instruction Book for Transmitter, Receiver and Indicator for Temp. Desig. Type 3, Mark 1, Model 1 Radar
6081	3336	Installation Instructions, Temp. Desig. Mark 1, Model 2 Radar
6082	3337	Modification Reports, Type 2, Mark 1, Model 2, Modification 2 Radar
6083	3338	Modification Reports, Type 2, Mark 1, Model 2 Antenna
6084	3339	Operating Instructions, Temp. Desig. Mark 1, Model 2 and Mark 2, Model 1 Radars
6085	3340	Instruction Book for KO(A) Model 1 Indicator used with Type 3, Mark 1, Model 3 Radar
6087	3342	Instruction Book, Type 3, Mark 1, Model 3 Land-Based Radar
6088	3343	Installation and Maintenance, Temp. Desig. Mark 1, Model 4 Radar
6089	3344	Instruction Book Antenna Switching Device used with Temp. Desig. Type 3, Mark 2, Model 1 Radar
6090	3345	Antenna Coupling Device used with Type 2, Mark 2, Model 1 Radar
6092	3347	Instruction Book for Receiver used with Temp. Desig. Type 3, Mark 3, Model 1 Radar
6093	3371	Instruction Book, Temp. Desig. Mark 2, Model 2 Radar
6095	3349	Operating Instructions, Mark 2, Model 2, Modification 2 Radar

ENCLOSURE (B), continued

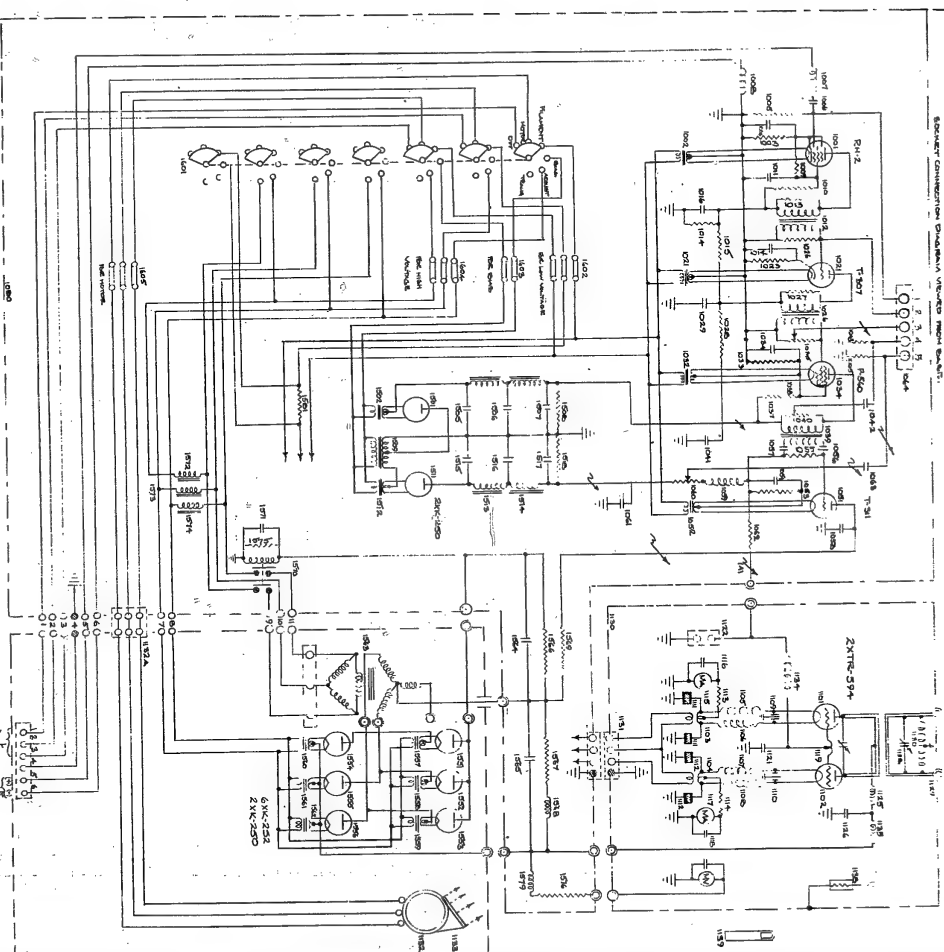
<u>NavTechJap No.</u>	<u>ATIS No.</u>	<u>Title</u>
6096	3350	Operating Instructions, Mark 2, Model 2, Modification 3 Radar
6097	3351	Instruction Book, Mark 4, Model 1 Radar
6098	3352	Instruction Book, Temp. Desig. Mark 4, Model 3 Radar
6099	3353	Instruction Book, Mark 4, Model 3, Modification 1 Radar
6106	3385	Radar Maintenance
6155	3357	Installation Drawings, Mark 1, Model 1, Modification 2 Radar
6156	3358	Receiver Operating Instructions, Mark 2, Model 2, Modification 2 Radar
6157	3359	Indicator, Type 3, Mark 2, Model 1 Radar
6158	3360	Operating Instructions, Mark 4, Model 1 Radar
6160	3394	Radar and Radar Intercept Receiver Installation Instructions
6163	3395	Table of Naval Radar
6166	3422	Instructions for Handling on Land the Type 3, Mark 6, Model 4 and Type 3, Model 4 Antenna
6216.2	3404	Experimental Report, Type 2, Mark 1, Model 2, Modification 3 Radar and Radar Using Submarine Antenna
6216.3	3404	Installation Report, Type 3, Mark 1, Model 1 (1LK) Radar
6216.5	3404	Report on Tuning the S3 Radar Installed at CHICHIJIMA
6216.7	3404	Tuning Procedure for Mark 4 Radar
6274	3368	Trouble Shooting Table for Temp. Desig. Type 3, Mark 2 Radar, June 1945
6275	3407	Instructions for Installing Radar and Radar Intercept Equipment (Proposed) Land Installations, April 1945
6277	3367	Modifications in Installing Temp. Desig. Type 3, Mark 1, Model 1 Radar, Feb. 1945
6278	3409	Experiments on the Temp. Desig. Mark 6, Model 1 Radar

ENCLOSURE (B), continued

<u>NavTechJap No.</u>	<u>ATIS No.</u>	<u>Title</u>
6279	3369	Temp. Desig. Mark 4, Model 4 Radar
6285	3448	Radar and Radar Intercept Installations

ENCLOSURE (C)

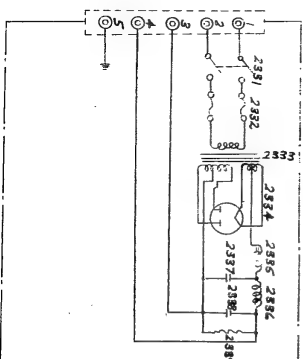
E-03



ENCLOSURE
MARK 1 MODEL 14

TRANSMITTER

19



OUTER CHASE

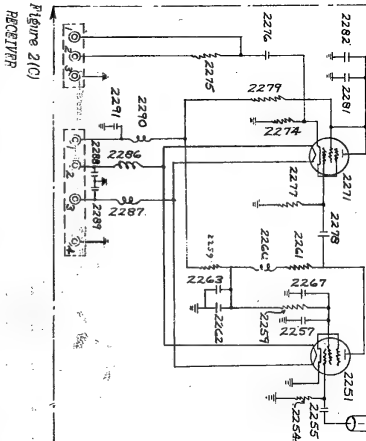
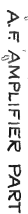


Figure 2(C)

ENCLOSURE (C), continued

TYPE-1A RADAR
Type 1A List of Spare Parts (1)

Part	Number	Type	Rating	Quantity	Part	Number	Type	Rating	Quantity
Filament Transformer					Choke Coil				
Transmitter	1002-1022	1)	5-200-10/12V for 67A A.C. 1.5KV	1	Transmitter	1572 1573 1574		0.125 0.1 0.075H	1
	1032		5-200-10/10V 2w for 57A A.C. 4KV	1	Audio-transformer				
	1052		5-200-10/12V 2w for 787A A.C. 7KV	1	1012	TF	225/225H		1
	1103-1104		5-200-10/10V for 6407A 1.5KV	1	1026 1039		200/450H		1
	1502-1512		5-200-10/5V 2w for 187A A.C. 7KV	1	3005	PT-40H-1313	1.5/1.5H		1
	1557 - 1562		5-200-10/5V 2w for 187A 22KV	1	3002	TF	70/ 45.5/ 0.105H		1
Receiver	2307		5-200-10/6.3V /2V for 30.3VA A.C. 1.5KV	1	Indicator	3038	TS	1) 200H 2) 200H 3) 200H 4) 200H 5) 200H 6) 200H	1
Indicator	3203		5-200-10/2.5 / 2.5V 2w for 1.5, 7, 1.5KV 41.25VA	1		3400	TF	10/ 65H	1
Transformer for Rectifier					3059	PT-40H-1317	200/120H		1
Transmitter	1507		220V/2.2 2.3 2.0 1.5 1.5 KV 2w 3007A for A.C. 7KV	1	Receiver	3081	TEAM	12/12H	1
	1563B	3 phase	200/1.75 4.2 3.9KV 487A 2w for 31KV	1		3121	PT-40C-1206	100/100H	1
Receiver	2333		5-200-10/5V 700V for 607A 1.5KV	1	*Transformer of rectifier for transmitter is separately reserved. (#1563)				
Indicator	3202		220/2000V 2w for 127A A.C. 9KV	1	Type 1A List of Spare Parts (3)				
	3542		220/5.800V 2w for 577A A.C. 2.5KV	1	Description Transformer for main rectifier				
A.F. Choke Coil					Part	Transmitter			
Transmitter	1503-1504 1513-1514	OK-9AK-327B	10H D.C. 50mA	1	Number	#1563			
Receiver	2335 2340	OK-9AK-327B	10H D.C. 150mA	1	Type	3# 250/4.75 A. 3 5.5KV for A.C. 21KV			
Indicator	3503 3504	OK-9AK-327B	10H D.C. 150mA	1	Rating				
					Quantity	1			

ENCLOSURE (C), continued

TYPE-14 RADAR
Type 14 List of Spare Parts (2)

Part	Number	Rating	Quantity	Part	Number	Rating	Quantity
Transmitter	1003	1004	1	Transmitter	1004	1004	1
	1005	1005	1		1005	1005	1
	1006	1006	1		1006	1006	1
	1007	1007	1		1007	1007	1
	1008	1008	1		1008	1008	1
	1009	1009	1		1009	1009	1
	1010	1010	1		1010	1010	1
	1011	1011	1		1011	1011	1
	1012	1012	1		1012	1012	1
	1013	1013	1		1013	1013	1
Receiver	1014	1014	1	Receiver	1014	1014	1
	1015	1015	1		1015	1015	1
	1016	1016	1		1016	1016	1
	1017	1017	1		1017	1017	1
	1018	1018	1		1018	1018	1
	1019	1019	1		1019	1019	1
	1020	1020	1		1020	1020	1
	1021	1021	1		1021	1021	1
	1022	1022	1		1022	1022	1
	1023	1023	1		1023	1023	1
Indicator	1024	1024	1	Indicator	1024	1024	1
	1025	1025	1		1025	1025	1
	1026	1026	1		1026	1026	1
	1027	1027	1		1027	1027	1
	1028	1028	1		1028	1028	1
	1029	1029	1		1029	1029	1
	1030	1030	1		1030	1030	1
	1031	1031	1		1031	1031	1
	1032	1032	1		1032	1032	1
	1033	1033	1		1033	1033	1
Transmitter	1034	1034	1	Transmitter	1034	1034	1
	1035	1035	1		1035	1035	1
	1036	1036	1		1036	1036	1
	1037	1037	1		1037	1037	1
	1038	1038	1		1038	1038	1
	1039	1039	1		1039	1039	1
	1040	1040	1		1040	1040	1
	1041	1041	1		1041	1041	1
	1042	1042	1		1042	1042	1
	1043	1043	1		1043	1043	1
Receiver	1044	1044	1	Receiver	1044	1044	1
	1045	1045	1		1045	1045	1
	1046	1046	1		1046	1046	1
	1047	1047	1		1047	1047	1
	1048	1048	1		1048	1048	1
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	1051	1051	1		1051	1051	1
	1052	1052	1		1052	1052	1
	1053	1053	1		1053	1053	1
Indicator	1054	1054	1	Indicator	1054	1054	1
	1055	1055	1		1055	1055	1
	1056	1056	1		1056	1056	1
	1057	1057	1		1057	1057	1
	1058	1058	1		1058	1058	1
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	1060	1060	1		1060	1060	1
	1061	1061	1		1061	1061	1
	1062	1062	1		1062	1062	1
	1063	1063	1		1063	1063	1
Transmitter	1064	1064	1	Transmitter	1064	1064	1
	1065	1065	1		1065	1065	1
	1066	1066	1		1066	1066	1
	1067	1067	1		1067	1067	1
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Receiver	1074	1074	1	Receiver	1074	1074	1
	1075	1075	1		1075	1075	1
	1076	1076	1		1076	1076	1
	1077	1077	1		1077	1077	1
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	1082	1082	1		1082	1082	1
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	1091	1091	1		1091	1091	1
	1092	1092	1		1092	1092	1
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Transmitter	1094	1094	1	Transmitter	1094	1094	1
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	1100	1100	1		1100	1100	1
	1101	1101	1		1101	1101	1
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	1103	1103	1		1103	1103	1
Receiver	1104	1104	1	Receiver	1104	1104	1
	1105	1105	1		1105	1105	1
	1106	1106	1		1106	1106	1
	1107	1107	1		1107	1107	1
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	1111	1111	1		1111	1111	1
	1112	1112	1		1112	1112	1
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Indicator	1114	1114	1	Indicator	1114	1114	1
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	1121	1121	1		1121	1121	1
	1122	1122	1		1122	1122	1
	1123	1123	1		1123	1123	1
Transmitter	1124	1124	1	Transmitter	1124	1124	1
	1125	1125	1		1125	1125	1
	1126	1126	1		1126	1126	1
	1127	1127	1		1127	1127	1
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Indicator	1144	1144	1	Indicator	1144	1144	1
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	1151	1151	1		1151	1151	1
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	1153	1153	1		1153	1153	1
Transmitter	1154	1154	1	Transmitter	1154	1154	1
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Receiver	1164	1164	1	Receiver	1164	1164	1
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	1171	1171	1		1171	1171	1
	1172	1172	1		1172	1172	1
	1173	1173	1		1173	1173	1
Indicator	1174	1174	1	Indicator	1174	1174	1
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	1182	1182	1		1182	1182	1
	1183	1183	1		1183	1183	1
Transmitter	1184	1184	1	Transmitter	1184	1184	1
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	1187	1187	1		1187	1187	1
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	1201	1201	1		1201	1201	1
	1202	1202	1		1202	1202	1
	1203	1203	1		1203	1203	1
Indicator	1204	1204	1	Indicator	1204	1204	1
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	1206	1206	1		1206	1206	1
	1207	1207	1		1207	1207	1
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	1211	1211	1		1211	1211	1
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Transmitter	1214	1214	1	Transmitter	1214	1214	1
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	1221	1221	1		1221	1221	1
	1222	1222	1		1222	1222	1
	1223	1223	1		1223	1223	1
Receiver	1224	1224	1	Receiver	1224	1224	1
	1225	1225	1		1225	1225	1
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	1227	1227	1		1227	1227	1
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	1229	1229	1		1229	1229	1
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ENCLOSURE (D)

E-03

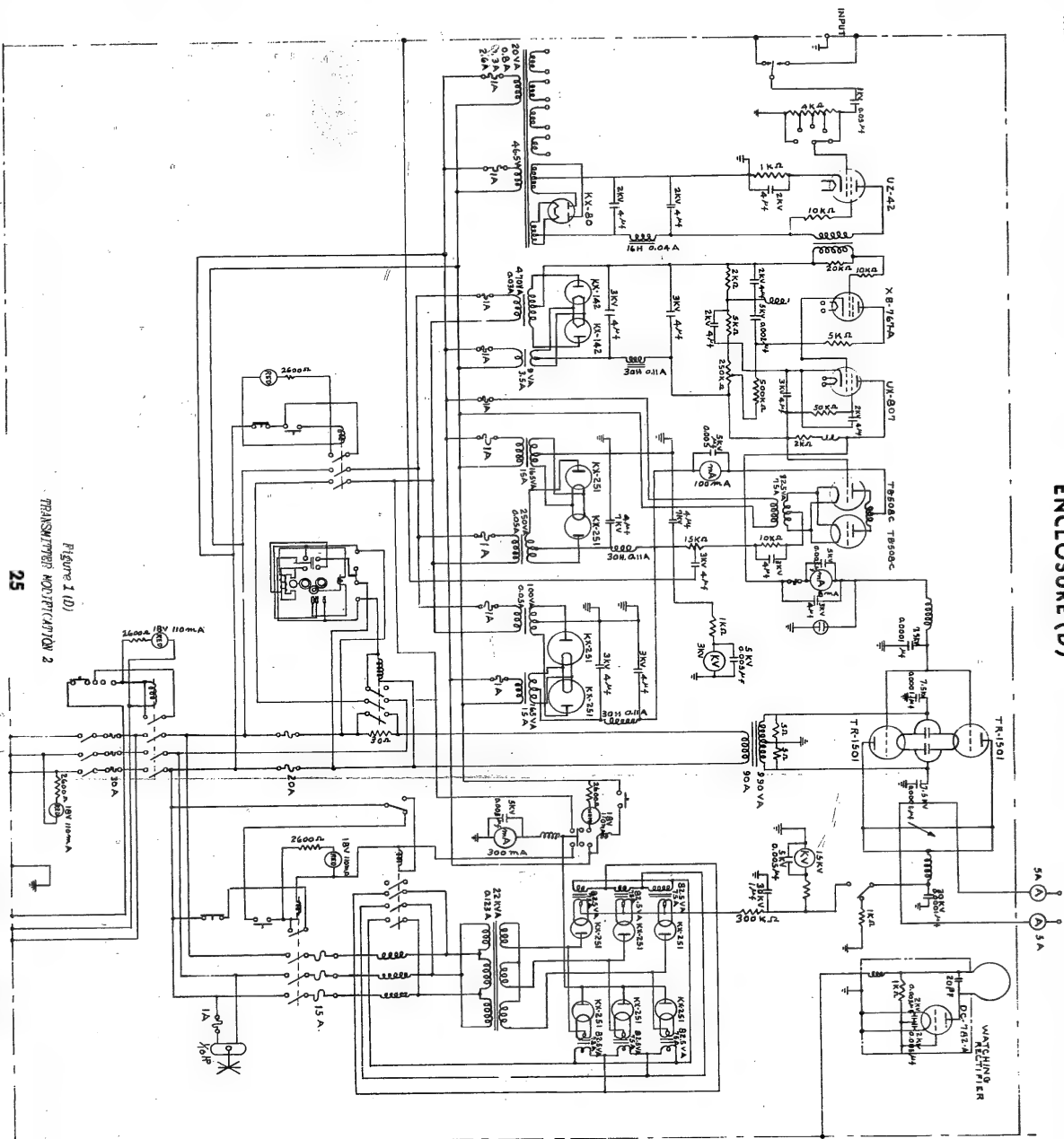


Figure 1 (D)

[illegible]

Technical drawing of a building's structural frame, showing a grid of columns and beams. The drawing includes dimensions in meters (m) and feet (ft). Key dimensions include a total width of 4.885 m, a total height of 10.170 m, and a section width of 1.800 m. The drawing is labeled "RECEIVING ANTENNA" and "RECEIVING ANTENNA".

This technical drawing shows a side elevation or section of a building's exterior wall. On the left, there is a vertical structural element, possibly a column or part of a balcony railing, featuring several horizontal supports. To its right, a large, multi-paned window or glass wall is depicted. Below this main window area, there is a smaller, rectangular feature that could be a door or a service hatch. Several diagonal lines represent structural bracing or roof slopes extending from the top of the wall towards the right. The drawing uses clean black lines on a white background, typical of architectural blueprints.

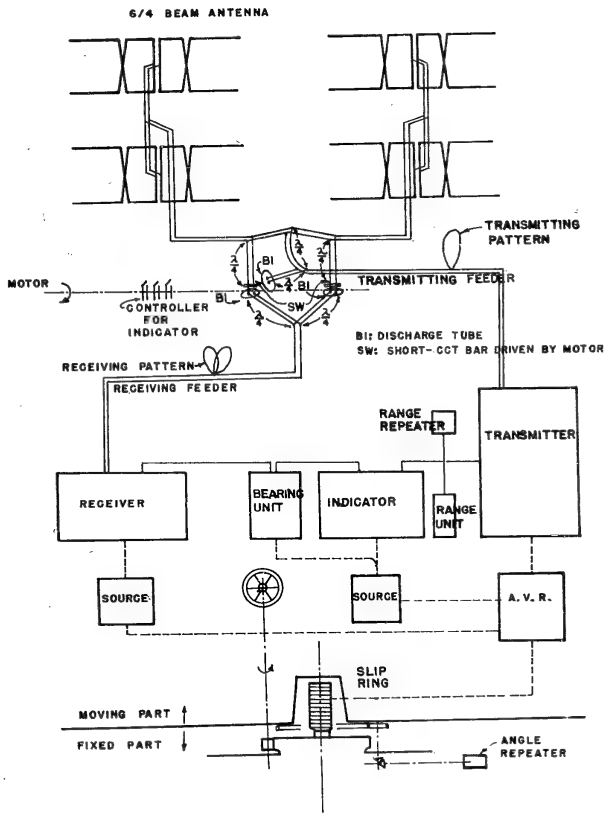
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ENCLOSURE (D), continued

LAND BASED

ACCURACY: $\pm 1 \text{ KM}$, $\pm 1^\circ$
 RANGE: 200 KM.
 WAVE LENGTH 3M

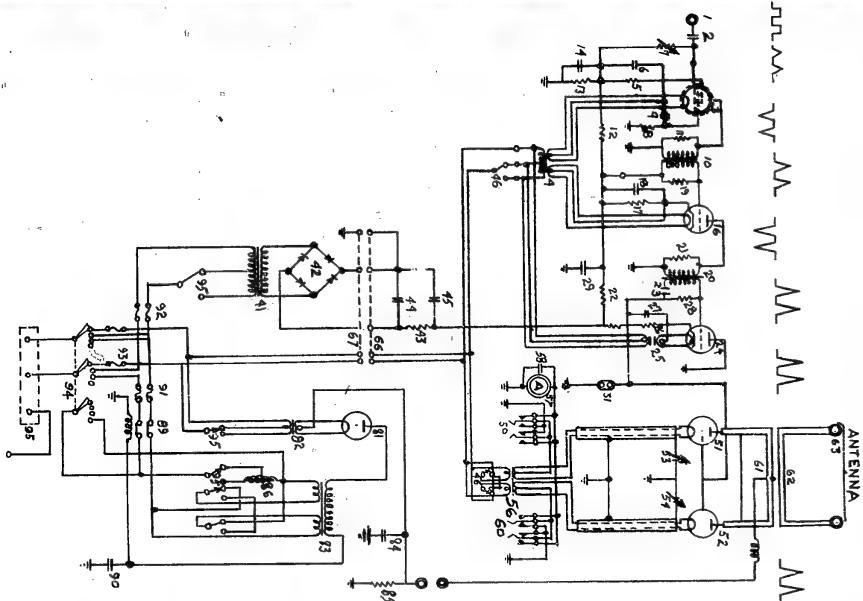
PULSE LENGTH: 20 μs
 POWER OUTPUT: 40 KW



BLOCK DIAGRAM 11-3-KAI

ENCLOSURE (E)

RESTRICTED



NO.	DESIGNATION	MTYPE	NOTES	AMT
1	INPUT TERMINAL	NAVY	SINGLE CONTACT	1
2	COUPLING CONDENSER	PH-4	10000P	1
3	AMPLIFIER #1	6X4	200K	1
4	FILE HEATER TRANSFORMER	C-2	10K	1
5	CATHODE BIAS CONDENSER	OP-654	200K	1
6	BY-PASS COND. FOR ABOVE	OP-654	200K	1
7	LATTICE WORK CONTROL RESIST.	W-2005	50K	1
8	SCREENING LAT. WK. RESIST.	C-2	200K	1
9	BY-PASS COND. FOR ABOVE	OP-654	200K	1
10	OUTPUT TRANSFORMER	TF-300T	300T	1
11	PLATE RESISTANCE	C-2	10K	1
12	VOLTAGE DROP RESISTANCE	C-5	200K	1
13	SAME AS ABOVE	C-3	100K	1
14	BY-PASS COND. FOR ABOVE	OP-654	200K	1
15	AMPLIFIER #2	T-307	10K	1
16	(FILE G)	C-2	10K	1
17	CATHODE BIAS RESIS.	OP-656	200K	1
18	BY-PASS COND. FOR ABOVE	C-2	10K	1
19	CONTROL LATWK. COND.	TF-300T	300T	1
20	OUTPUT TRANSFORMER	C-2	10K	1
21	PLATE RESISTANCE	C-5	30K	1
22	VOLTAGE DROP RESIST.	OP-656	200K	1
23	BY-PASS COND. FOR ABOVE	T-307	10K	1
24	MODULATION TUBE	C-2	10K	1
25	FILE HEATER TRANSFORMER	OP-656	200K	1
26	CATHODE BIAS RESIS.	C-2	20K	1
27	BY-PASS COND. FOR ABOVE	OP-656	200K	1
28	CONTROL LATWK. RESIS.	C-2	10K	1
29	PROTECTIVE CONDENSER	OP-653	100K	1
30	DISCHARGE	C-2	10K	1
31	POWER SUPPLY TRANSF.	CT-311227	1	1
32	SELENIUM RECTIFIER	C-2	10K	1
33	FILTER RESISTANCE	OP-656	200K	1
34	FILTER CONDENSER	OP-656	200K	1
35	SAME AS ABOVE	CT-311241	1	1
36	POWER SUPPLY CHANGE SW.			1
37	OSCILLATOR TUBE	T-311	1	1
38	SAME AS ABOVE	CT-31143	1	1
39	FILAMENT BY-PASS COND.	CT-311230	1	1
40	SAME AS ABOVE	CT-311230	1	1
41	FIL. COIL	CT-311230	1	1
42	FIL. COIL	CT-311230	1	1
43	FIL. COIL	CT-311230	1	1
44	FIL. COIL	CT-311230	1	1
45	FIL. COIL	CT-311230	1	1
46	FIL. COIL	CT-311230	1	1
47	PLATE AMMETER	CT-311230	1	1
48	BY-PASS COND. FOR ABOVE	CT-311230	1	1
49	CHANGE OVER SW. FOR ABOVE	CT-311230	1	1
50	"	CT-311230	1	1
51	"	CT-311230	1	1
52	"	CT-311230	1	1
53	"	CT-311230	1	1
54	"	CT-311230	1	1
55	"	CT-311230	1	1
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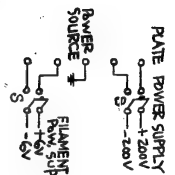
NO.	DESIGNATION	MTYPE	NOTES	AMT
61	PLATE CL. CIR. OPEN COIL	CT-31118	1	1
62	ANT. COIL	CT-31118	1	1
63	TERMINAL FOR ABOVE	CT-31118	1	1
64	H.F. FREQ. CHOKER COIL	CT-31118	1	1
65	H.V. TERMINAL	CT-31118	1	1
66	JUNCTION PANEL (THERMION)	CT-31118	1	1
67	SAME AS ABOVE	CT-31118	1	1
68				
69				
70				
71				
72				
73				
74				
75				
76				
77				
78				
79				
80				
81	PLATE TOW. SUPP. RECTIFIER	OP-656	200K	1
82	FIL. HEATER TRANSFORMER	OP-656	200K	1
83	POW. SUPPLY TRANSFORMER	OP-656	200K	1
84	FILTER CONDENSER	OP-656	200K	1
85	RESISTANCE	C-5	10K	1
86	INDUCTION COIL	CT-31118	1	1
87	ABSENT			
88	ABSENT			
89	ABSENT			
90	BY-PASS COND. OIL IMPREG.	OP-655	100K	1
91	FUSE	CT-31118	1	1
92	SAME AS ABOVE	CT-31118	1	1
93	SAME AS ABOVE	CT-31118	1	1
94	POWER SUPPLY SWITCH	CT-31118	1	1
95	TERMINAL PANEL	CT-31118	1	1

VR1
10K-
C 5/4F

HIGH FREQUENCY
AMPLIFIER

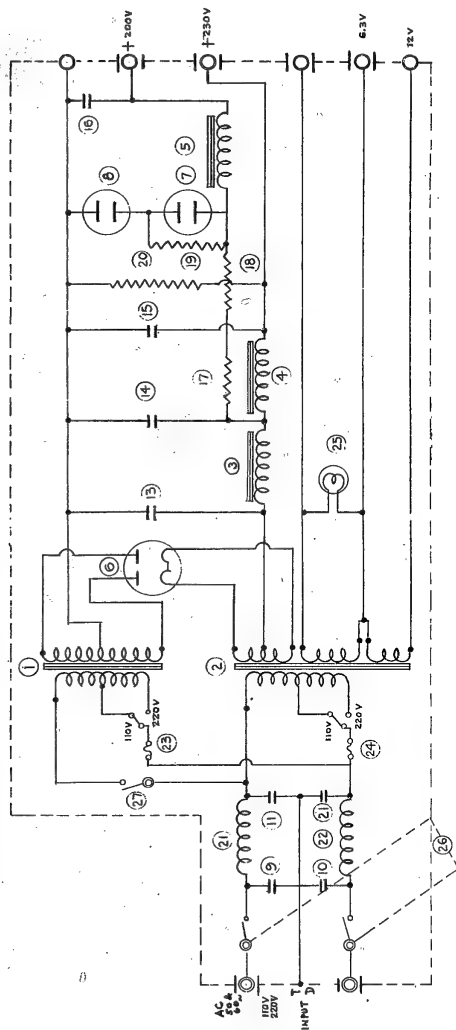
ENCLOSURE (E), continued

E-03



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ENCLOSURE (E), continued



S Y M B O L	D E S I G N A T I O N	C A P A C I T Y	Q U A N T I T Y	N O T E	S Y M B O L	D E S I G N A T I O N	C A P A C I T Y	Q U A N T I T Y	N O T E
1	POWER TRANSFORMER	125 / 250-500V	15		16	PAPER CONDENSER	2 MF X 2		STANDARD MOD.
2	"	125 / 250-500V	16		17	FUSED RESISTANCE	2 K Ω		"
3	LOW FREQ. OSC. GR.	50 Hz	17		18	"	1 K Ω		"
4	"	"	18		19	"	500 K Ω		"
5	"	"	19		20	"	100 Ω		"
6	VACUUM TUBE	6X4-500A	20		21	PHIL. RESISTOR			"
7	5000 OHM 1/2 W	VIR - 1/2 W	21		22	"			"
8	"	"	22		23	FUSE			"
9	500 K CONDENSER	0.01 MF	23	MINI STD MOD.	24	"			ALUMINUM ELECTROLYTIC
10	"	"	24	"	25	INDICATOR LIGHT			"
11	"	"	25	"	26	SPARE SWITCH			"
12	"	"	26	"	27	"			"
13	PAPER CONDENSER	2 MF X	27	STANDARD MOD.	28	"			"
14	"	2 MF X	28	"	29	"			"

PLATE 4 (B)

ENCLOSURE (E), continued

RADAR 3-11

For Land Use

OUTPUT POWER = 10 KW.

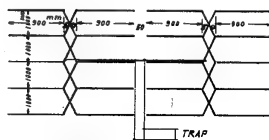
FREQUENCY = 159 Mc/s

PULSE LENGTH = 20 μ s.

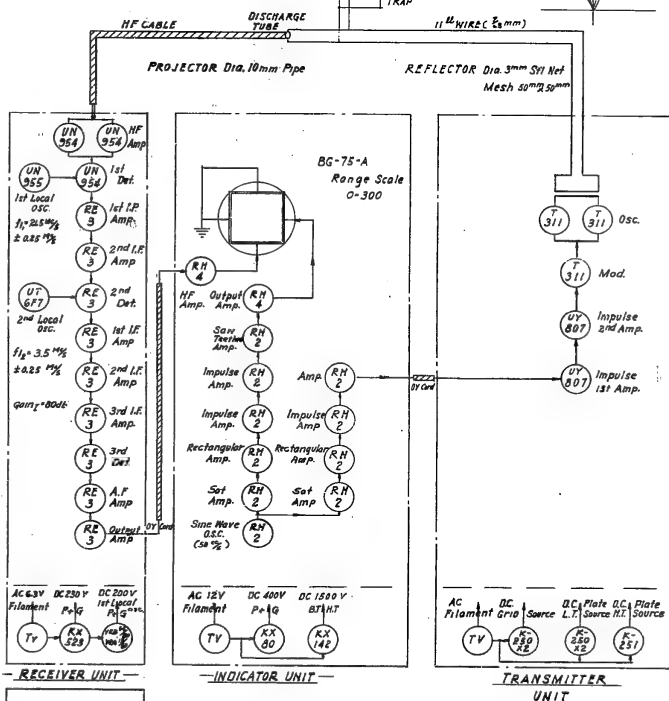
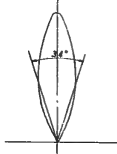
RANGE = 150 KM.

ACCURACY = $\pm 2-3$ KM

ANTENNA



HORIZONTAL PATTERN

Figure 51E
BLOCK DIAGRAM

ENCL. CCS)
TYPE 3 MODEL 1 MARK 1 MODIF 1
BLOCK DIA.

RESTRICTED

ENCLOSURE (F)

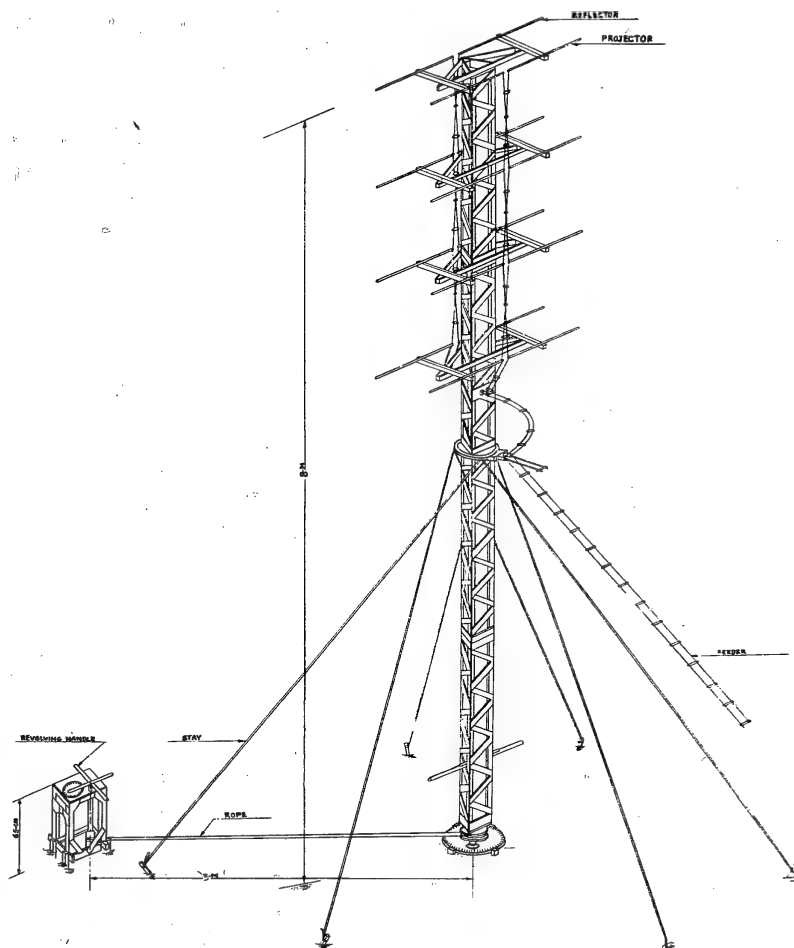


Figure 1(F)
ANTENNA #1

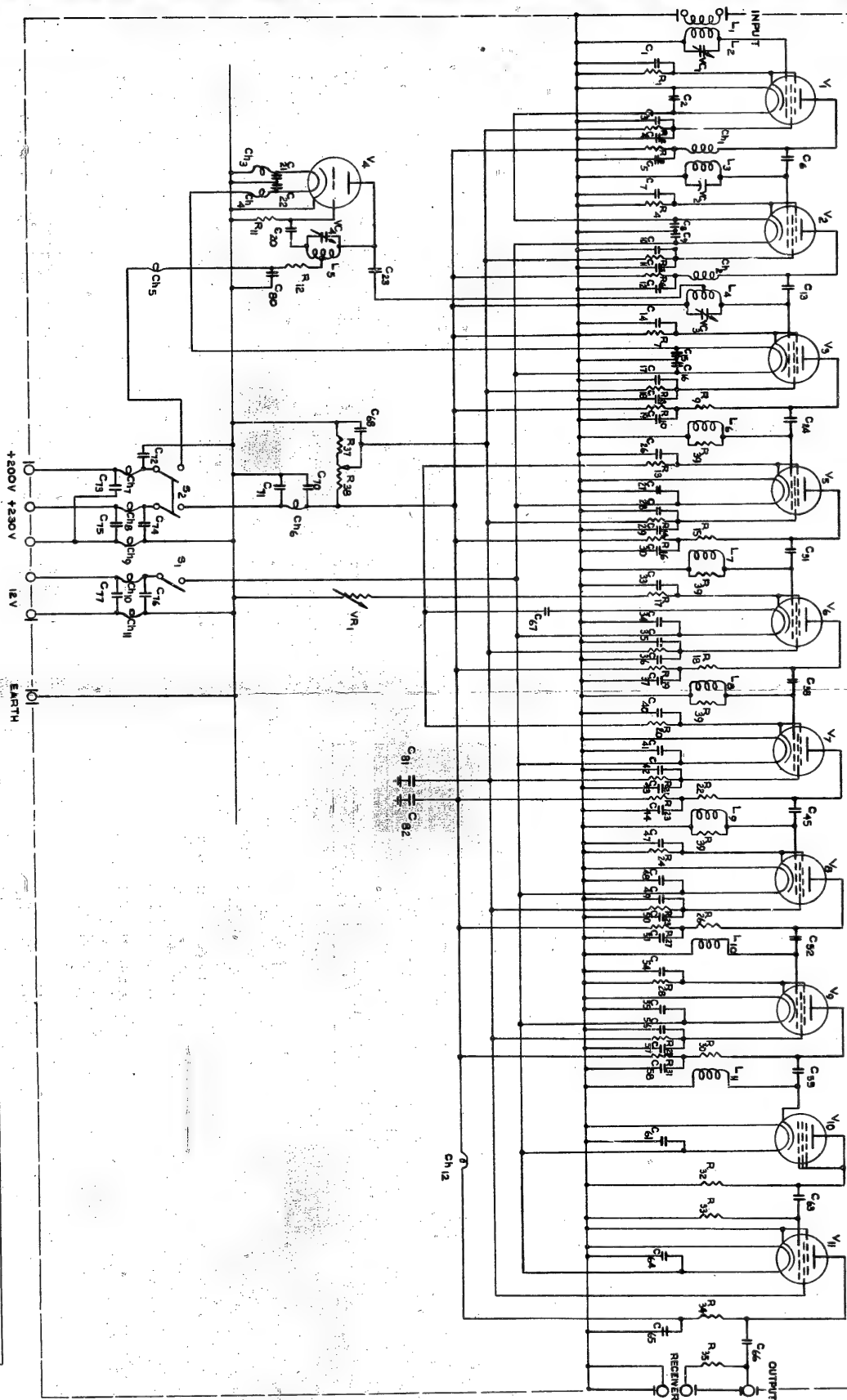
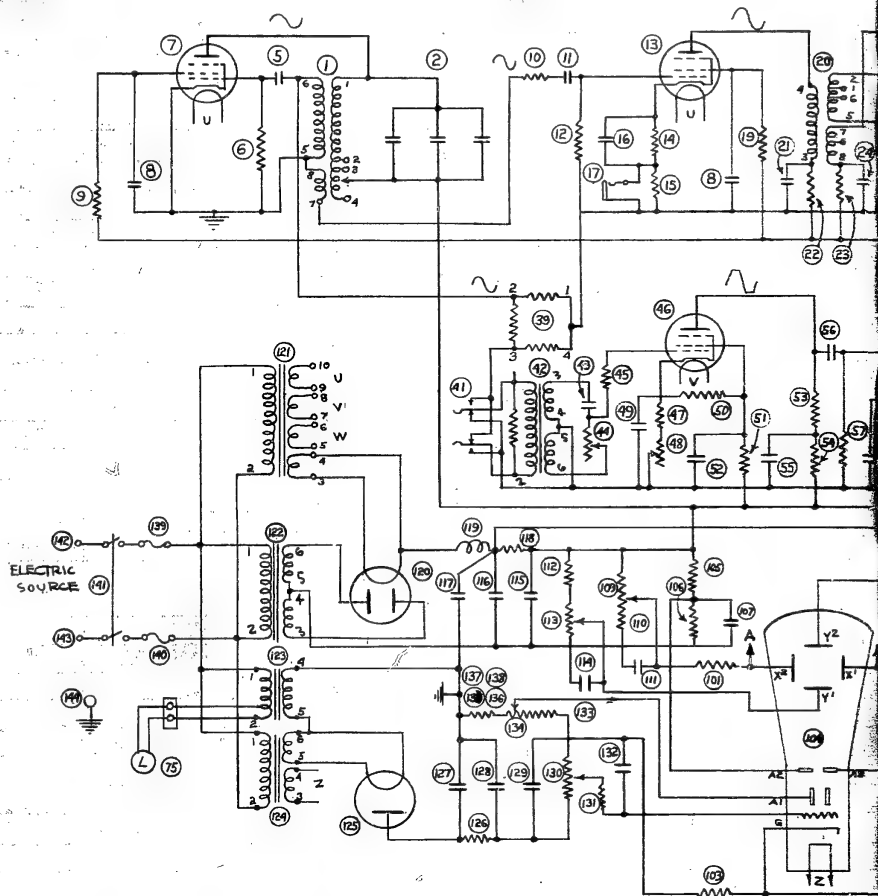


FIGURE 4.17.
RECEIVER

36

ENCL. D(4)
TYPE 3 MARK I MODEL 3

RESTRICTED



NO.	NAME	VALUE	TYPE	AMT.	NO.	NAME	VALUE	TY
1	MAIN OSCILLATOR COIL	(1-3) 800 MH	218-RM 12	1	44	PHASE SHIFTING RESISTANCE CONTROL	500 K Ω	M-2
2	" " CONDENSER	1-2 500 PF	917-N-4325	1	45	CONTROL GRID BIAS RESISTOR	100 K Ω	C-2
3	" " CONDENSER	1-2 500 PF	917-N-4325	1	46	AMPLIFIER (b)		UZ-1
4	" " CONDENSER	1-2 500 PF	917-N-4325	1	47	CATHODE RESISTANCE	0.2 K Ω	C-2
5	MAIN OSC. GRID CONDENSER	0.1 MF 1KV	M-60	1	48	" " CONTROL	10 K Ω	M-2
6	CONTROL GRID BIAS RESISTANCE	10 K Ω	C-2	1	49	" " BYPASS CONDENSER	4MF 2KV	KOD-1
7	MAIN OSCILLATOR TUBE		UZ-6C6	1	50	AMPLIFIER BIAS VOLTAGE DIVIDER RES.	40 K Ω	C-2
8	S.G. BYPASS COND.	1MF 2KV	KOD-1020	1	51	S.G. RESISTOR	10 K Ω	C-2
9	S.G. RESISTANCE	100 K Ω	C-2	1	52	" " BYPASS COND.	10MF 2KV	KOD-1
10	GRID RESISTANCE	100 K Ω	C-2	1	53	PLATE SERIES RESISTOR	10 K Ω	C-2
11	COUPLING COND.	.005 1KV	M-60	1	54	" " BYPASS COND.	10MF 2KV	KOD-1
12	CONTROL GRID BIAS RESISTOR	100 K Ω	C-2	1	55	" " BYPASS COND.	10MF 2KV	KOD-1
13	AMPLIFIER TUBE (a)		UZ-6C6	1	56	COUPLING CONDENSER	1MF 1KV	M-2
14	CATHODE RESISTOR (a)	15 K Ω	C-2	1	57	CONTROL GRID BIAS RESISTOR	100 K Ω	C-2
15	" " "	15 K Ω	C-2	1	58	SATURATED AMPLIFIER (C)		UZ-1
16	" " BYPASS COND.	1MF 2KV	KOD-1020	1	59	CATHODE RESISTANCE	10 K Ω	C-2
17	MAIN OSC. WATCHING JACK	MJ-7 JACK	MOD-55263	1	60	" " BYPASS COND.	4MF 2KV	KOD-1
18	S.G. BYPASS COND.	1MF 2KV	KOD-1020	1	61	SAT. AMP. (C) VOLTAGE DIVIDER RESIS.	50 K Ω	C-2
19	S.G. RESISTOR	100 K Ω	C-2	1	62	S.G. RESISTOR	100 K Ω	C-2
20	BACK COUP. COIL FOR DAMPED OSCILLATOR	207-SG-16		1	63	" " BYPASS COND.	1MF 2KV	KOD-1
21	PLATE BYPASS COND.	10MF 2KV	KOD-1020	1	64	PLATE SERIES RESISTOR	20 K Ω	C-2
22	" " RESISTOR	5 K Ω	C-2	1	65	" " " "	3 K Ω	C-2
23	" " " "	5 K Ω	C-2	1	66	" " " "	10 K Ω	C-2
24	" " BYPASS COND.	1MF 2KV	KOD-1020	1	67	" " " " BYPASS COND.	1MF 2KV	KOD-1
25	DAMPED OSCILLATOR TUBE		UZ-6C6	1	68	COUPLING RESISTOR	100 K Ω	C-2
26	CATHODE RESISTOR	50 K Ω	C-2	1	69	" " COND.	1MF 1KV	M-2
27	" " CONTROL	20 K Ω	NV-200 SA	1	70	CONTROL GRID BIAS RESISTOR	300 K Ω	C-2
28	" " BYPASS COND.	.015MF 1KV	M-60	1	71	SAW-TEETHED OSC. TOR		UZ-1
29	CONTROL GRID RESISTOR	100 K Ω	C-2	1				
30	OUTPUT AMPLIFIER TUBE		UZ-6C6	1				
31	CATHODE RESISTOR	10 K Ω	C-2	1				
32	" " " "	20 K Ω	C-2	1				
33	" " BYPASS COND.	10MF 2KV	KOD-1020	1	76	TIME AXIS SAW-TEETHED WAVE COND.	.005MF 1KV	M-2
34	PLATE RESISTOR	10 K Ω	C-2	1	77	" " AMPLITUDE CONTROL	30 K Ω	NV-20
35	" " BYPASS COND.	10MF 2KV	KOD-1020	1	78	" " AUXILIARY RESISTOR	20 K Ω	C-2
36	SYNCHROUS SIGNAL COUPLING COND.	1MF 1KV	M-60	1	79	" " AMPLITUDE CONT. BYPASS COND.	1MF 2KV	KOD-1
37	" " " " RESISTOR	500 K Ω	C-2	1	80	" " " "		
38	CONCENT. FOR TRANS. SYNC. WAVE			1	81	TIME AXIS AMP. CONT. BYPASS COND.	500 Ω -300 Ω	M-2
39	RESIS. ATTN. CHECKING FOR BACK COUPL.	1000 Ω GDB	TYPE 803	1	82	" " VOLTAGE COUPLING COND	0.1MF 1KV	M-2
40	KEY CHECKING FOR TIME AXIS	TYPE 92		1	83	SIGNAL CONCENT		
41	MATCHING RESISTOR	10 K Ω	C-2	1	84	TRANSITION WATCHING SIGNAL CONCENT		
42	MAIN OSC. SINE WAVE INPUT TRANS.		207-SG-55	1	85	WARNING WATCHING EXCHANGE KEY	TYPE 808	
43	PHASE SHIFTING COND.	500 pF	M-60	1	86	SIGNAL INPUT COUPLING COND.	1MF 2KV	KOD-1

SYMBOL	CONSTANT & TYPE	NOTE	SYMBOL	CONSTANT & TYPE	NOTE	SYMBOL	CONSTANT
C1	100PF ± 10% B-12	TITANIUM CONDENSER				C77	0.01μF ± 20%
C2	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	C40	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER		
C3			C41				
C4	0.5μF ± 20% NO-R0 TYPE-1	PAPER CONDENSER	C42			C80	0.01μF ± 20%
C5	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	C43	0.5μF ± 20% NO-R0 TYPE-1	PAPER CONDENSER	C81	
C6	50PF ± 10% B-12	TITANIUM CONDENSER	C44	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	C82	
C7	100PF ± 10% B-12	TITANIUM CONDENSER	C45	50PF ± 10% B-12	TITANIUM CONDENSER		
C8	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER				Ch1	
C9			C47	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	Ch2	
C10			C48			Ch3	
C11	0.5μF ± 20% NO-R0 TYPE-1	PAPER CONDENSER	C49			Ch4	
C12	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	C50	0.5μF ± 20% NO-R0 TYPE-1	PAPER CONDENSER	Ch5	
C13	50PF ± 10% B-12	TITANIUM CONDENSER	C51	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	Ch6	
C14	100PF ± 10% B-12	TITANIUM CONDENSER	C52	50PF ± 10% B-12	TITANIUM CONDENSER	Ch7	
C15	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER				Ch8	
C16			C54	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	Ch9	
C17			C55			Ch10	
C18	0.5μF ± 20% NO-R0 TYPE-1	PAPER CONDENSER	C56			Ch11	
C19	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	C57	0.5μF ± 20% NO-R0 TYPE-1	PAPER CONDENSER	Ch12	
C20	10PF ± 10% B-10	TITANIUM CONDENSER	C58	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER		
C21	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	C59	50PF ± 10% B-12	TITANIUM CONDENSER	L1	
C22						L2	
C23	2PF ± 10% B-10	TITANIUM CONDENSER	C61	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	L3	
C24	50PF ± 10% B-12	TITANIUM CONDENSER				L4	
			C63	0.5μF ± 20% NO-R0 TYPE-1	PAPER CONDENSER	L5	
C26	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	C64	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	L6	
C27			C65	4μF ± 20% NO-2 TYPE-1		L7	
C28			C66	0.5μF ± 20% NO-R0 TYPE-1		L8	
C29	0.5μF ± 20% NO-R0 TYPE-1	PAPER CONDENSER	C67			L9	
C30	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	C68			L10	
C31	50PF ± 10% B-12	TITANIUM CONDENSER				L11	
			C70	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER		
C33	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	C71			R1	0.5KΩ ± 5%
C34			C72			R2	2KΩ ± 5%
C35			C73			R3	
C36	0.5μF ± 20% NO-R0 TYPE-1	PAPER CONDENSER	C74			R4	0.5KΩ ± 5%
C37	0.01μF ± 20% TYPE-2	MICA OR ACETILE CONDENSER	C75			R5	2KΩ ± 5%
C38	1μF ± 10% B-12	TITANIUM CONDENSER	C76			R6	

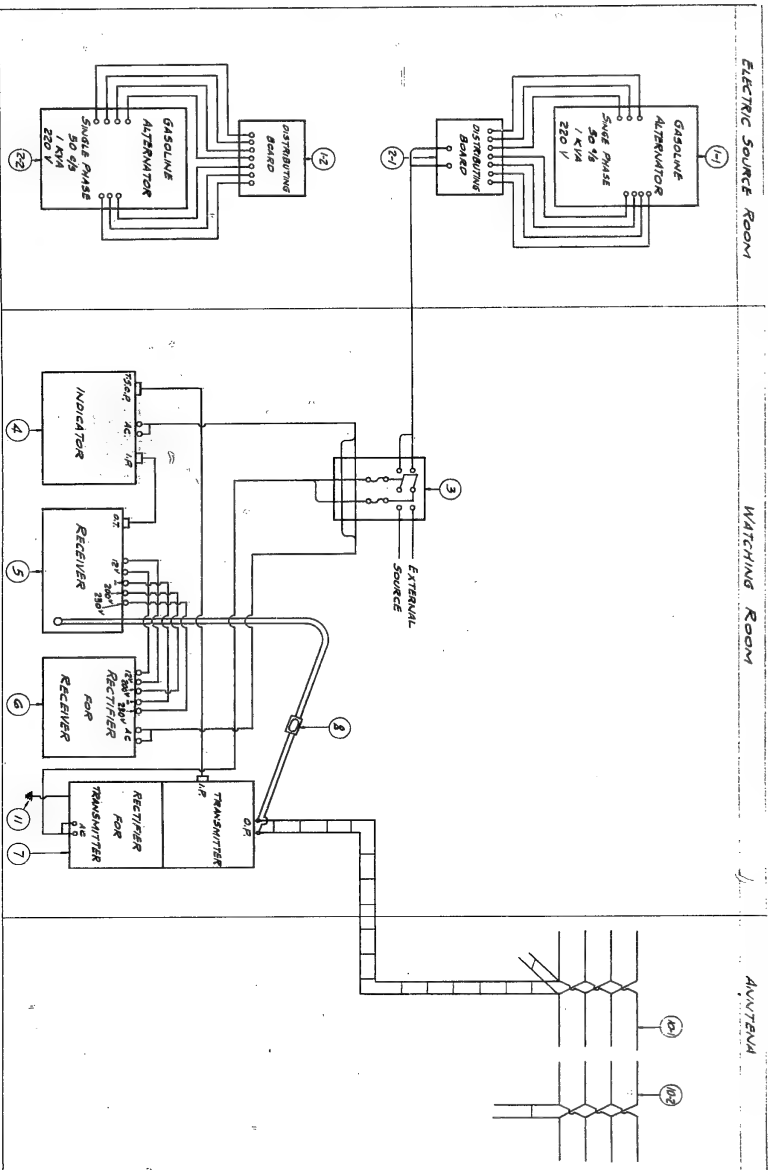
SYMBOL	CONSTANT & TYPE	NOTE	SYMBOL	CONSTANT & TYPE	NOTE	SYMBOL	CONSTANT & TYPE	NOTE
C 77	0.01 μ F $\pm 20\%$ TYPE-2	MICA OR ACETILE CONDENSER.	R 7	1 K $\Omega \pm 10\%$ TYPE-D-0.25		V 1	UN-954	
			R 8	2 K $\Omega \pm 10\%$		V 2		
			R 9	10 K $\Omega \pm 10\%$		V 3		
C 80	0.01 μ F $\pm 20\%$ TYPE-2	MICA OR ACETILE CONDENSER.	R 10	2 K $\Omega \pm 10\%$		V 4	UN-955	
C 81			R 11	50 K $\Omega \pm 10\%$		V 5	RH-2	
C 82			R 12	2 K $\Omega \pm 10\%$		V 6		
			R 13	0.3 K $\Omega \pm 10\%$		V 7		
Ch 1			R 14	2 K $\Omega \pm 10\%$		V 8		
Ch 2			R 15	10 K $\Omega \pm 10\%$ TYPE-D-1		V 9		
Ch 3			R 16	2 K $\Omega \pm 10\%$ TYPE-D-0.25		V 10		
Ch 4			R 17	0.3 K $\Omega \pm 10\%$		V 11		
Ch 5			R 18	10 K $\Omega \pm 10\%$ TYPE-D-1				
Ch 6			R 19	2 K $\Omega \pm 10\%$ TYPE-D-0.25		Vc 1	PF $\pm 15\%$	
Ch 7			R 20	0.3 K $\Omega \pm 10\%$		Vc 2		HALF-FIXED
Ch 8			R 21	2 K $\Omega \pm 10\%$		Vc 3		
Ch 9			R 22	10 K $\Omega \pm 10\%$ TYPE-D-1		Vc 4		
Ch 10			R 23	2 K $\Omega \pm 10\%$ TYPE-D-0.25				
Ch 11			R 24	0.3 K $\Omega \pm 10\%$		Vr 1	5 K $\Omega \pm 20\%$ TYPE-10 NV-35C	
Ch 12			R 25	2 K $\Omega \pm 10\%$				
			R 26	10 K $\Omega \pm 10\%$ TYPE-D-1				
L 1			R 27	2 K $\Omega \pm 10\%$ TYPE-D-0.25				
L 2			R 28	0.3 K $\Omega \pm 10\%$				
L 3			R 29	2 K $\Omega \pm 10\%$				
L 4			R 30	10 K $\Omega \pm 10\%$ TYPE-D-1				
L 5			R 31	20 K $\Omega \pm 10\%$ TYPE-D-0.25				
L 6			R 32	10 K $\Omega \pm 10\%$ TYPE-D-1				
L 7			R 33	100 K $\Omega \pm 10\%$ TYPE-D-0.25				
L 8			R 34	10 K $\Omega \pm 10\%$ TYPE-D-2				
L 9			R 35	50 K $\Omega \pm 10\%$ TYPE-D-1				
L 10			R 36	2 K $\Omega \pm 10\%$ TYPE-D-0.25				
L 11			R 37	5 K $\Omega \pm 10\%$ TYPE-20W	WIRE RESISTANCE			
			R 38					
R 1	0.5 K $\Omega \pm 10\%$ TYPE-D-0.25		R 39	30 K $\Omega \pm 10\%$ TYPE-D-0.25				
R 2	2 K $\Omega \pm 10\%$							
R 3								
R 4	0.5 K $\Omega \pm 10\%$		S 1		T-STYLE SNAP SWITCH			
R 5	2 K $\Omega \pm 10\%$		S 2					
R 6								

Figure 6(P)
INDICATOR

RESTRICTED

ENCLOSURE (F), continued

E-03



ELECTRIC WIRE TABLE

KIND OF WIRE	TYPE	NUMBER OF WIRE	AMOUNT OF WIRE	PLACE	TOTAL	NOTE
24	"	104	234	(1)-(3)		
"	"	"	"	(3)-(4)		
"	"	"	"	(4)-(5)		
"	"	"	"	(5)-(6)		
"	"	"	"	(6)-(7)		
"	"	"	"	(7)-(8)		
"	"	"	"	(8)-(9)		
"	"	"	"	(9)-(10)		
"	"	"	"	(10)-(11)		
"	"	"	"	(11)-(12)		
"	"	"	"	(12)-(13)		
"	"	"	"	(13)-(14)		
"	"	"	"	(14)-(15)		
"	"	"	"	(15)-(16)		
"	"	"	"	(16)-(17)		
"	"	"	"	(17)-(18)		
"	"	"	"	(18)-(19)		
"	"	"	"	(19)-(20)		
"	"	"	"	(20)-(21)		
"	"	"	"	(21)-(22)		
"	"	"	"	(22)-(23)		
"	"	"	"	(23)-(24)		
"	"	"	"	(24)-(25)		
"	"	"	"	(25)-(26)		
"	"	"	"	(26)-(27)		
"	"	"	"	(27)-(28)		
"	"	"	"	(28)-(29)		
"	"	"	"	(29)-(30)		
"	"	"	"	(30)-(31)		
"	"	"	"	(31)-(32)		
"	"	"	"	(32)-(33)		
"	"	"	"	(33)-(34)		
"	"	"	"	(34)-(35)		
"	"	"	"	(35)-(36)		
"	"	"	"	(36)-(37)		
"	"	"	"	(37)-(38)		
"	"	"	"	(38)-(39)		
"	"	"	"	(39)-(40)		
"	"	"	"	(40)-(41)		
"	"	"	"	(41)-(42)		
"	"	"	"	(42)-(43)		
"	"	"	"	(43)-(44)		
"	"	"	"	(44)-(45)		
"	"	"	"	(45)-(46)		
"	"	"	"	(46)-(47)		
"	"	"	"	(47)-(48)		
"	"	"	"	(48)-(49)		
"	"	"	"	(49)-(50)		
"	"	"	"	(50)-(51)		
"	"	"	"	(51)-(52)		
"	"	"	"	(52)-(53)		
"	"	"	"	(53)-(54)		
"	"	"	"	(54)-(55)		
"	"	"	"	(55)-(56)		
"	"	"	"	(56)-(57)		
"	"	"	"	(57)-(58)		
"	"	"	"	(58)-(59)		
"	"	"	"	(59)-(60)		
"	"	"	"	(60)-(61)		
"	"	"	"	(61)-(62)		
"	"	"	"	(62)-(63)		
"	"	"	"	(63)-(64)		
"	"	"	"	(64)-(65)		
"	"	"	"	(65)-(66)		
"	"	"	"	(66)-(67)		
"	"	"	"	(67)-(68)		
"	"	"	"	(68)-(69)		
"	"	"	"	(69)-(70)		
"	"	"	"	(70)-(71)		
"	"	"	"	(71)-(72)		
"	"	"	"	(72)-(73)		
"	"	"	"	(73)-(74)		
"	"	"	"	(74)-(75)		
"	"	"	"	(75)-(76)		
"	"	"	"	(76)-(77)		
"	"	"	"	(77)-(78)		
"	"	"	"	(78)-(79)		
"	"	"	"	(79)-(80)		
"	"	"	"	(80)-(81)		
"	"	"	"	(81)-(82)		
"	"	"	"	(82)-(83)		
"	"	"	"	(83)-(84)		
"	"	"	"	(84)-(85)		
"	"	"	"	(85)-(86)		
"	"	"	"	(86)-(87)		
"	"	"	"	(87)-(88)		
"	"	"	"	(88)-(89)		
"	"	"	"	(89)-(90)		
"	"	"	"	(90)-(91)		
"	"	"	"	(91)-(92)		
"	"	"	"	(92)-(93)		
"	"	"	"	(93)-(94)		
"	"	"	"	(94)-(95)		
"	"	"	"	(95)-(96)		
"	"	"	"	(96)-(97)		
"	"	"	"	(97)-(98)		
"	"	"	"	(98)-(99)		
"	"	"	"	(99)-(100)		

APPARATUS TABLE

SYMBOL	NAME	QUANTITY	NOTE
1-1	GASOLINE ALTERNATOR (GENERATOR)	1	USE 1000 WATT
1-2	"	1	USE 1000 WATT
2-1	DISTRIBUTING BOARD	1	USE 1000 WATT
2-2	"	1	USE 1000 WATT
3	BRANCH BOARD	1	USE 1000 WATT
4	INDICATOR	1	USE 1000 WATT
5	RECEIVER	1	USE 1000 WATT
6	RECEIVER FOR RECEIVER	1	USE 1000 WATT
7	TRANSMITTER & RECEIVER	1	USE 1000 WATT
8	DISCHARGE TUBE	1	USE 1000 WATT
10-1	ANTENNA (PROTECTOR)	1	USE 1000 WATT
10-2	"	1	USE 1000 WATT
11	EARTH	1	USE 1000 WATT

FIGURE 7(F)
EXTERNAL WIRING

ENCLOSURE (F), continued

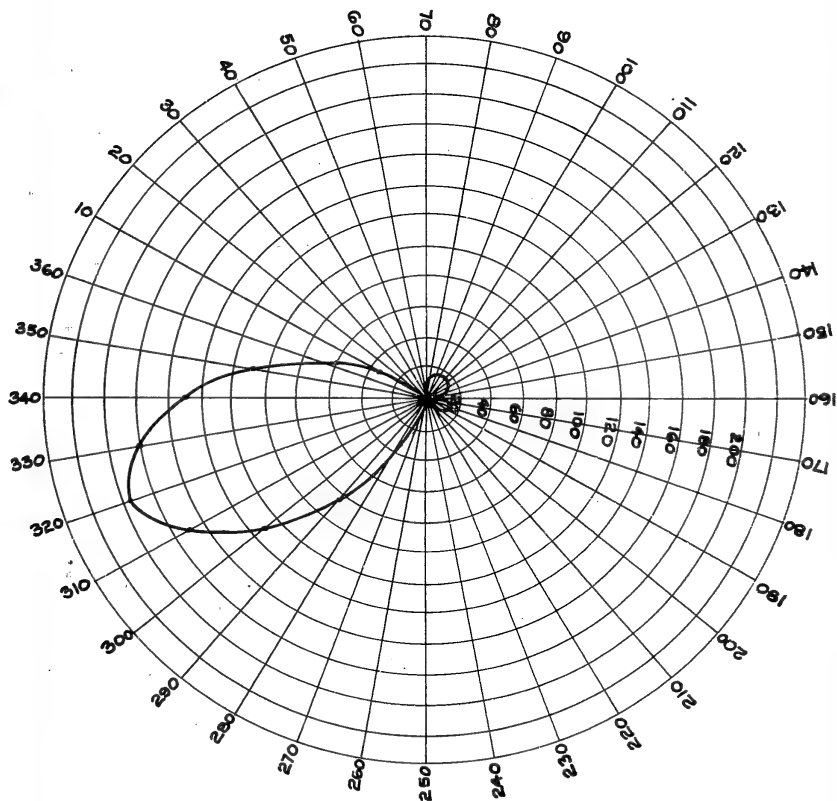


Figure 8(F)
HORIZONTAL ANTENNA PATTERN

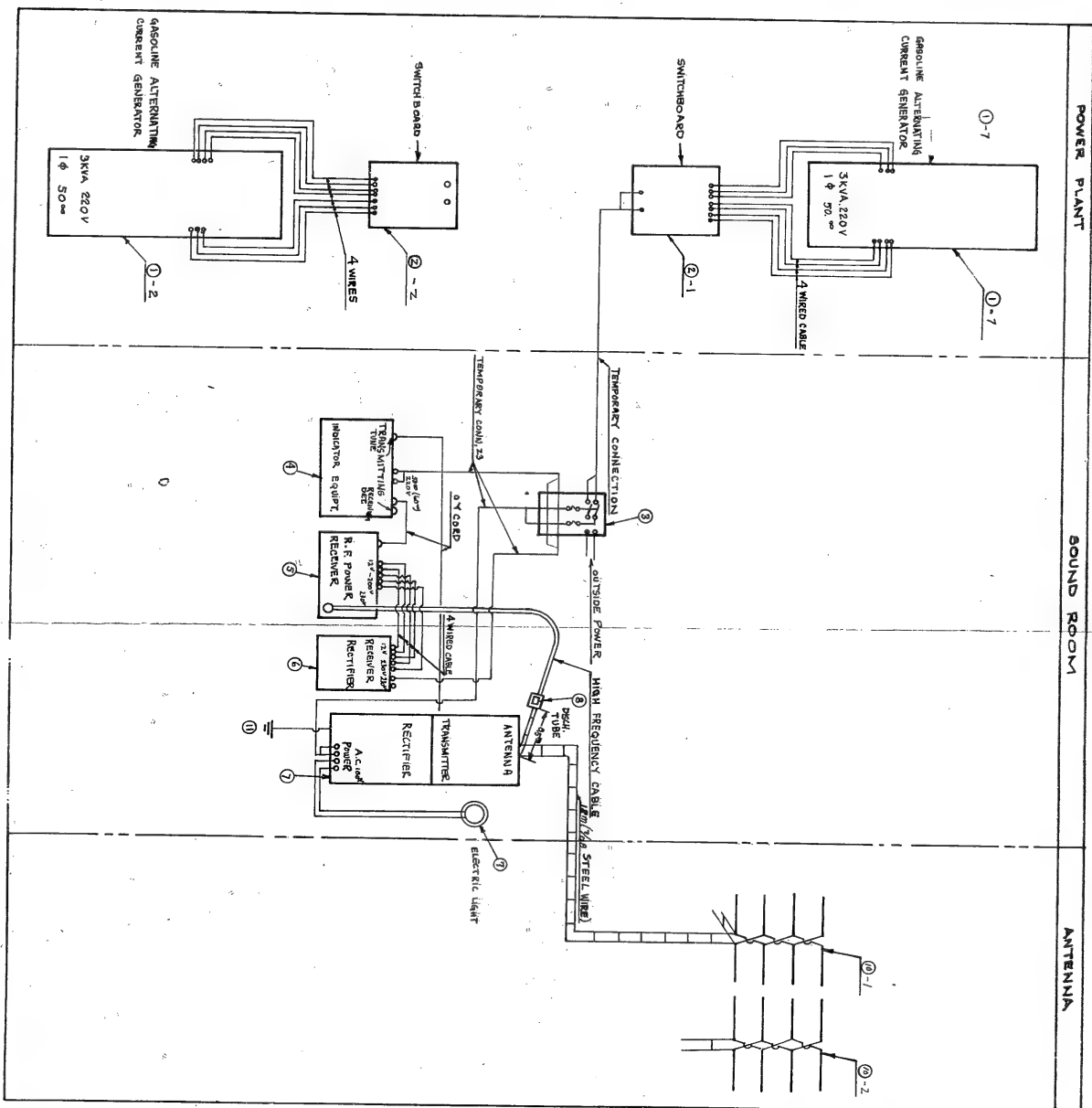
POWER PLANT

SOUND ROOM

ENCLOSURE (1), continued

ANTENNA

RESTRICTED



Symbol	Designation	Power	Notes
1-1	3KVA GASOLINE ALTERNATING CURRENT GENERATOR	1 X	
1-2	" " " " " "	"	
2-1	3KVA GASOLINE ALTERNATING CURRENT GENERATOR	1 X	
2-2	" " " " " "	"	
3	DISPATCHER	1 "	
4	INDICATOR EQUIPMENT	1 "	
5	RECEIVER	1 "	
6	RECEIVER FOR RECTIFIER	1 "	
7	TRANSMITTER & RECTIFIER	1 "	
8	RECEIVER FOR RECTIFIER	1 "	
9	ELECTRIC LIGHTS	1 "	
10-1	ANTENNA DISCHARGE	1 "	
10-2	" " RECHARGE	1 "	
11	GROUND CONNECTION	1 "	

CHART OF ELECTRIC WIRES

KIND	TYPE	NO.	EST. NO.	PLACE	TOTAL	NOTE
WIRE						
1	"	16	25	3-1	37	
"	"	"	"	3-2	"	
"	"	"	"	3-3	"	
"	"	"	"	3-4	"	
"	"	"	"	3-5	"	
"	"	"	"	3-6	"	
"	"	"	"	3-7	"	
"	"	"	"	3-8	"	
"	"	"	"	3-9	"	
"	"	"	"	3-10	"	
"	"	"	"	3-11	"	
"	"	"	"	3-12	"	
"	"	"	"	3-13	"	
"	"	"	"	3-14	"	
"	"	"	"	3-15	"	
"	"	"	"	3-16	"	
"	"	"	"	3-17	"	
"	"	"	"	3-18	"	
"	"	"	"	3-19	"	
"	"	"	"	3-20	"	
"	"	"	"	3-21	"	
"	"	"	"	3-22	"	
"	"	"	"	3-23	"	
"	"	"	"	3-24	"	
"	"	"	"	3-25	"	
"	"	"	"	3-26	"	
"	"	"	"	3-27	"	
"	"	"	"	3-28	"	
"	"	"	"	3-29	"	
"	"	"	"	3-30	"	
"	"	"	"	3-31	"	
"	"	"	"	3-32	"	
"	"	"	"	3-33	"	
"	"	"	"	3-34	"	
"	"	"	"	3-35	"	
"	"	"	"	3-36	"	
"	"	"	"	3-37	"	
"	"	"	"	3-38	"	
"	"	"	"	3-39	"	
"	"	"	"	3-40	"	
"	"	"	"	3-41	"	
"	"	"	"	3-42	"	
"	"	"	"	3-43	"	
"	"	"	"	3-44	"	
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"	"	"	"	3-93	"	
"	"	"	"	3-94	"	
"	"	"	"	3-95	"	
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RESTRICTED

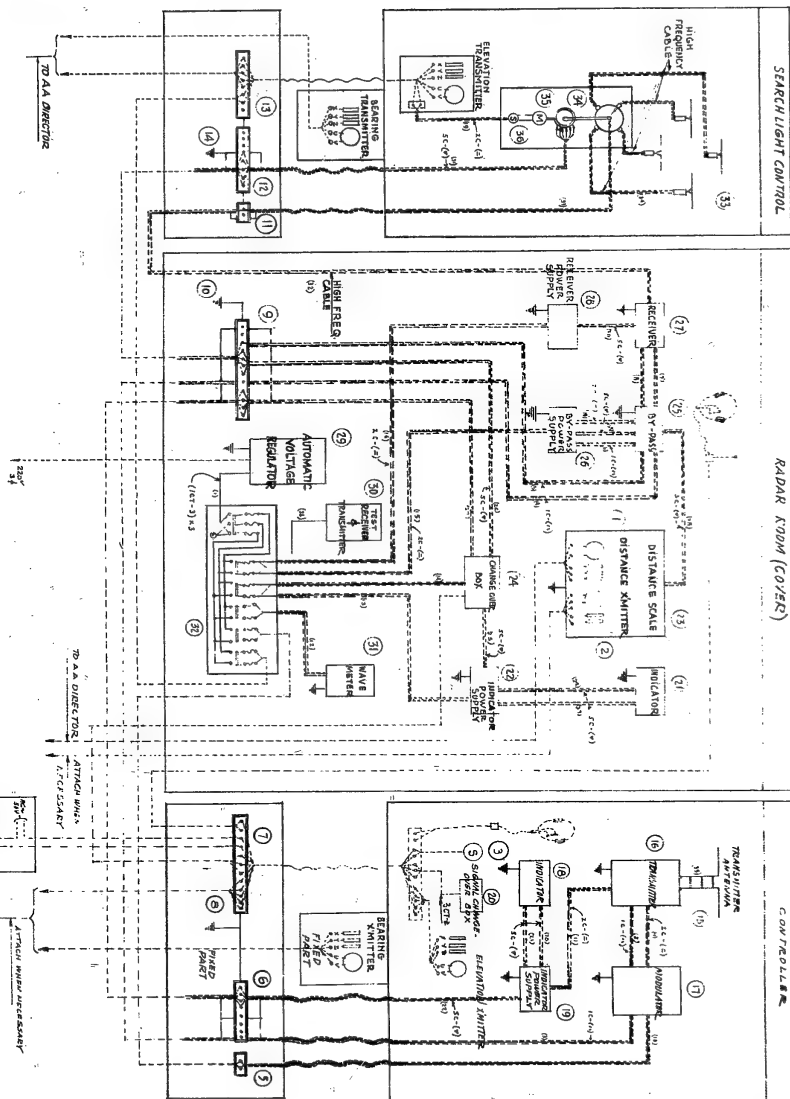
SEARCH LIGHT CONTROL

RADAR ROOM (CO/RS)

131

ENCLOSURE (G)

CONTROLLER



LIST OF ESSENTIAL PARTS		
REF	DESCRIPTION	REMARKS
1	DISTANCE KNITTER M22	MARK MOD 2
2	INDICATOR	POB DB
3	RECEIVER	RECEIVING
4	5 SIGNAL LIGHT	FOR SIGNALING
5	INTERMITTENT BOX	MOD 1 - 21TH
6	TERMINAL BOX OTHER	5. TEST USED
7	GROUNDING BOARD	12 " x 4 "
8	GROUNDING BOARD	OTHER USED
9	GROUNDING BOARD	1 TEST USED
10	GROUNDING BOARD	5 " x 4 "
11	TERMINAL BOX 1TH	7 " x 4 "
12	GROUNDING BOARD	7 " x 4 "
13	GROUNDING BOARD	7 " x 4 "
14	GROUNDING BOARD	7 " x 4 "
15	TRANSMITTER ANTENNA	1
16	TRANSMITTER	1
17	REGULATOR	1
18	INDICATOR	1
19	INDICATOR PWR SUPPLY	1
20	SIGNAL CHANGER BOX	1
21	INDICATOR	1

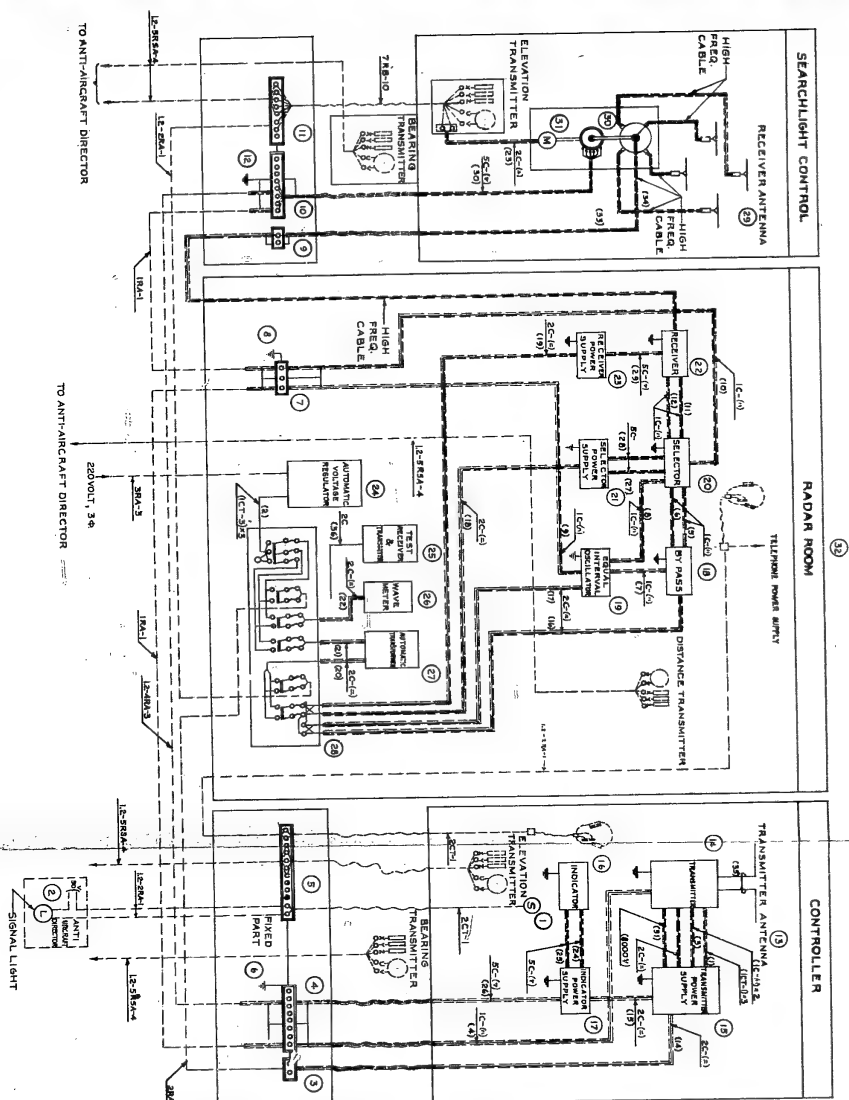
ESSENTIAL WIRE DISTRIBUTION

ESSENTIAL WIRE DIST		
NO	DESCRIPTION	TOTAL
1	1 FT. 3/4" 16	15 METERS
2	1 FT. 3/4" 16	15 METERS
3	1 FT. 3/4" 16	15 METERS
4	1 FT. 3/4" 16	15 METERS
5	1 FT. 3/4" 16	15 METERS
6	1 FT. 3/4" 16	15 METERS
7	1 FT. 3/4" 16	15 METERS
8	1 FT. 3/4" 16	15 METERS
9	1 FT. 3/4" 16	15 METERS
10	1 FT. 3/4" 16	15 METERS
11	1 FT. 3/4" 16	15 METERS
12	1 FT. 3/4" 16	15 METERS
13	1 FT. 3/4" 16	15 METERS
14	1 FT. 3/4" 16	15 METERS
15	1 FT. 3/4" 16	15 METERS
16	1 FT. 3/4" 16	15 METERS
17	1 FT. 3/4" 16	15 METERS
18	1 FT. 3/4" 16	15 METERS
19	1 FT. 3/4" 16	15 METERS
20	1 FT. 3/4" 16	15 METERS
21	1 FT. 3/4" 16	15 METERS

- CONTINUED -		
NO	DESCRIPTION	TOTAL
22	1 FT. 3/4" 16	15 METERS
23	1 FT. 3/4" 16	15 METERS
24	1 FT. 3/4" 16	15 METERS
25	1 FT. 3/4" 16	15 METERS
26	1 FT. 3/4" 16	15 METERS
27	1 FT. 3/4" 16	15 METERS
28	1 FT. 3/4" 16	15 METERS
29	1 FT. 3/4" 16	15 METERS
30	1 FT. 3/4" 16	15 METERS
31	1 FT. 3/4" 16	15 METERS
32	1 FT. 3/4" 16	15 METERS
33	1 FT. 3/4" 16	15 METERS
34	1 FT. 3/4" 16	15 METERS
35	1 FT. 3/4" 16	15 METERS
36	1 FT. 3/4" 16	15 METERS
37	1 FT. 3/4" 16	15 METERS

E-03

Figure 1(G)
EXTERNAL WIRING (MODIFICATION 1)



LIST OF ESSENTIAL PARTS		
NO	NAME	REMARKS
1	DISC CUTTING TOOL	
2	SPRINT, CLAMP	
3	DISC CUTTING TOOL	
4	DISC CUTTING TOOL	
5	DISC CUTTING TOOL	
6	DISC CUTTING TOOL	
7	DISC CUTTING TOOL	
8	DISC CUTTING TOOL	
9	DISC CUTTING TOOL	
10	DISC CUTTING TOOL	
11	DISC CUTTING TOOL	
12	DISC CUTTING TOOL	
13	DISC CUTTING TOOL	
14	DISC CUTTING TOOL	
15	DISC CUTTING TOOL	
16	DISC CUTTING TOOL	
17	DISC CUTTING TOOL	
18	DISC CUTTING TOOL	
19	DISC CUTTING TOOL	
20	DISC CUTTING TOOL	

LIST OF ESSENTIAL PARTS		
NO.	NAME	REMARKS
01	RECEIVER POWER SUPPLY	
02	RECEIVER	
03	RECEIVER POWER SUPPLY	
04	ANTENNETIC COILS READING	
05	TEST RECEIVER WITH TRANSMITTER	
06	WAVE METER	
07	AUTOMATIC TRANSMITTER	
08	SECTIONAL PANEL	
09	RECEIVER ANTENNA	
10	PHASE RING	
11	SPINTER FOR PHASE RING	
12	MOON RING COVER	

LIST OF ESSENTIAL WIRING					ARTICLE L E
NO.	DESCRIPTION	UNIT	QUANTITY	TOTAL	
(1)	127-1	72	1	72	
(2)	127-2	16	1	16	
(3)	127-3	28	1	28	
(4)	127-4	28	1	28	
(5)	127-5	28	1	28	
(6)	127-6	28	1	28	
(7)	127-7	28	1	28	
(8)	127-8	28	1	28	
(9)	127-9	28	1	28	
(10)	127-10	28	1	28	
(11)	127-11	28	1	28	
(12)	127-12	28	1	28	
(13)	127-13	28	1	28	
(14)	127-14	28	1	28	
(15)	127-15	28	1	28	
(16)	127-16	28	1	28	
(17)	127-17	28	1	28	
(18)	127-18	28	1	28	
(19)	127-19	28	1	28	
(20)	127-20	28	1	28	
(21)	127-21	28	1	28	
(22)	127-22	28	1	28	
(23)	127-23	28	1	28	
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(25)	127-25	28	1	28	
(26)	127-26	28	1	28	
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(29)	127-29	28	1	28	
(30)	127-30	28	1	28	
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(38)	127-38	28	1	28	
(39)	127-39	28	1	28	
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(41)	127-41	28	1	28	
(42)	127-42	28	1	28	
(43)	127-43	28	1	28	
(44)	127-44	28	1	28	
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(46)	127-46	28	1	28	
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(283)	127-283	28	1	28	
(284)	127-284	28	1	28	
(285)	127-285	28	1	2	

LIST OF ESSENTIAL WIRING							AMTBLT.
NO.	ITEM	QUANTITY	UNIT	TOTAL			
Q-1	200' 10"	4	feet				
Q-2	200' 10"	2	feet				
Q-3	200' 10"	2	feet				
Q-4	200' 10"	2	feet				
Q-5	200' 10"	2	feet				
Q-6	200' 10"	2	feet				
Q-7	200' 10"	2	feet				
Q-8	200' 10"	2	feet				
Q-9	200' 10"	2	feet				
Q-10	200' 10"	2	feet				
Q-11	200' 10"	2	feet				
Q-12	200' 10"	2	feet				
Q-13	200' 10"	2	feet				
Q-14	200' 10"	2	feet				
Q-15	200' 10"	2	feet				
Q-16	200' 10"	2	feet				
Q-17	200' 10"	2	feet				
Q-18	200' 10"	2	feet				
Q-19	200' 10"	2	feet				
Q-20	200' 10"	2	feet				
Q-21	200' 10"	2	feet				
Q-22	200' 10"	2	feet				
Q-23	200' 10"	2	feet				
Q-24	200' 10"	2	feet				
Q-25	200' 10"	2	feet				
Q-26	200' 10"	2	feet				
Q-27	200' 10"	2	feet				
Q-28	200' 10"	2	feet				
Q-29	200' 10"	2	feet				
Q-30	200' 10"	2	feet				
Q-31	200' 10"	2	feet				
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Q-33	200' 10"	2	feet				
Q-34	200' 10"	2	feet				
Q-35	200' 10"	2	feet				
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Q-37	200' 10"	2	feet				
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Q-39	200' 10"	2	feet				
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Q-44	200' 10"	2	feet				
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Q-46	200' 10"	2	feet				
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Q-64	200' 10"	2	feet				
Q-65	200' 10"	2	feet				
Q-66	200' 10"	2	feet				
Q-67	200' 10"	2	feet				
Q-68	200' 10"	2	feet				
Q-69	200' 10"	2	feet				
Q-70	200' 10"	2	feet				
Q-71	200' 10"	2	feet				
Q-72	200' 10"	2	feet				
Q-73	200' 10"	2	feet				
Q-74	200' 10"	2	feet				
Q-75	200' 10"	2	feet				
Q-76	200' 10"	2	feet				
Q-77	200' 10"	2	feet				
Q-78	200' 10"	2	feet				
Q-79	200' 10"	2	feet				
Q-80	200' 10"	2	feet				
Q-81	200' 10"	2	feet				
Q-82	200' 10"	2	feet				
Q-83	200' 10"	2	feet				
Q-84	200' 10"	2	feet				
Q-85	200' 10"	2	feet				
Q-86	200' 10"	2	feet				
Q-87	200' 10"	2	feet				
Q-88	200' 10"	2	feet				
Q-89	200' 10"	2	feet				
Q-90	200' 10"	2	feet				
Q-91	200' 10"	2	feet				
Q-92	200' 10"	2	feet				
Q-93	200' 10"	2	feet				
Q-94	200' 10"	2	feet				
Q-95	200' 10"	2	feet				
Q-96	200' 10"	2	feet				
Q-97	200' 10"	2	feet				
Q-98	200' 10"	2	feet				
Q-99	200' 10"	2	feet				
Q-100	200' 10"	2	feet				

ENCLOSURE (a), continued

[illegible]

45

ENCLOSURE (G), continued

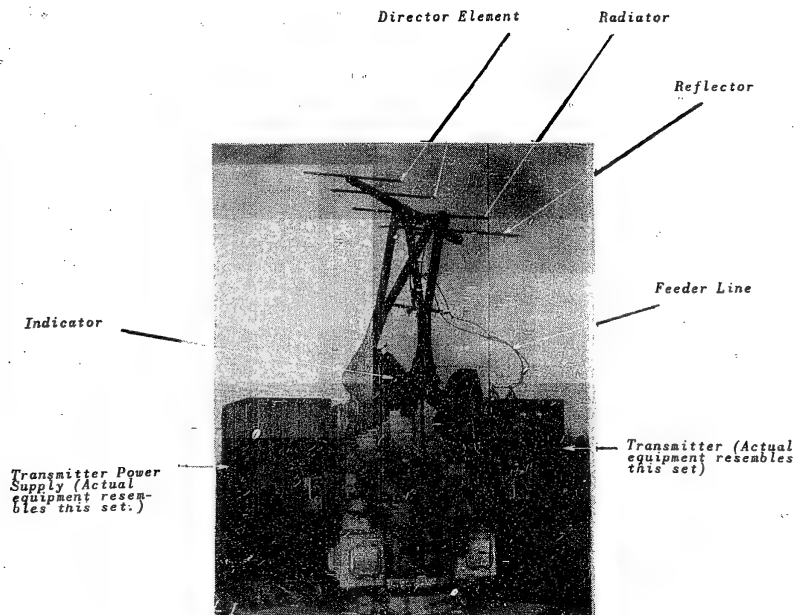
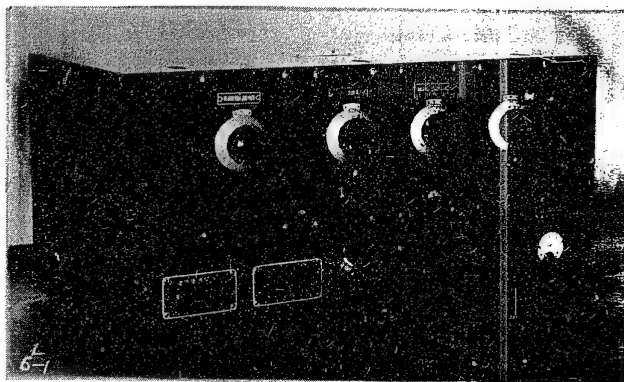
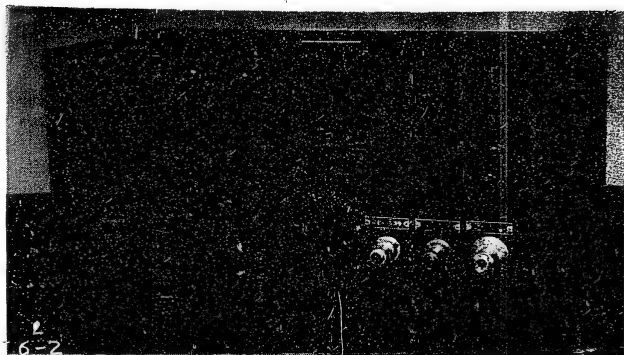


Figure 4(G)
TRANSMITTER AND INDICATOR UNIT
GENERAL APPEARANCE

ENCLOSURE (G), continued



Front View



Rear View

Figure 6(G)
RECEIVER

RESTRICTED

ENCLOSURE (G), continued

E-03

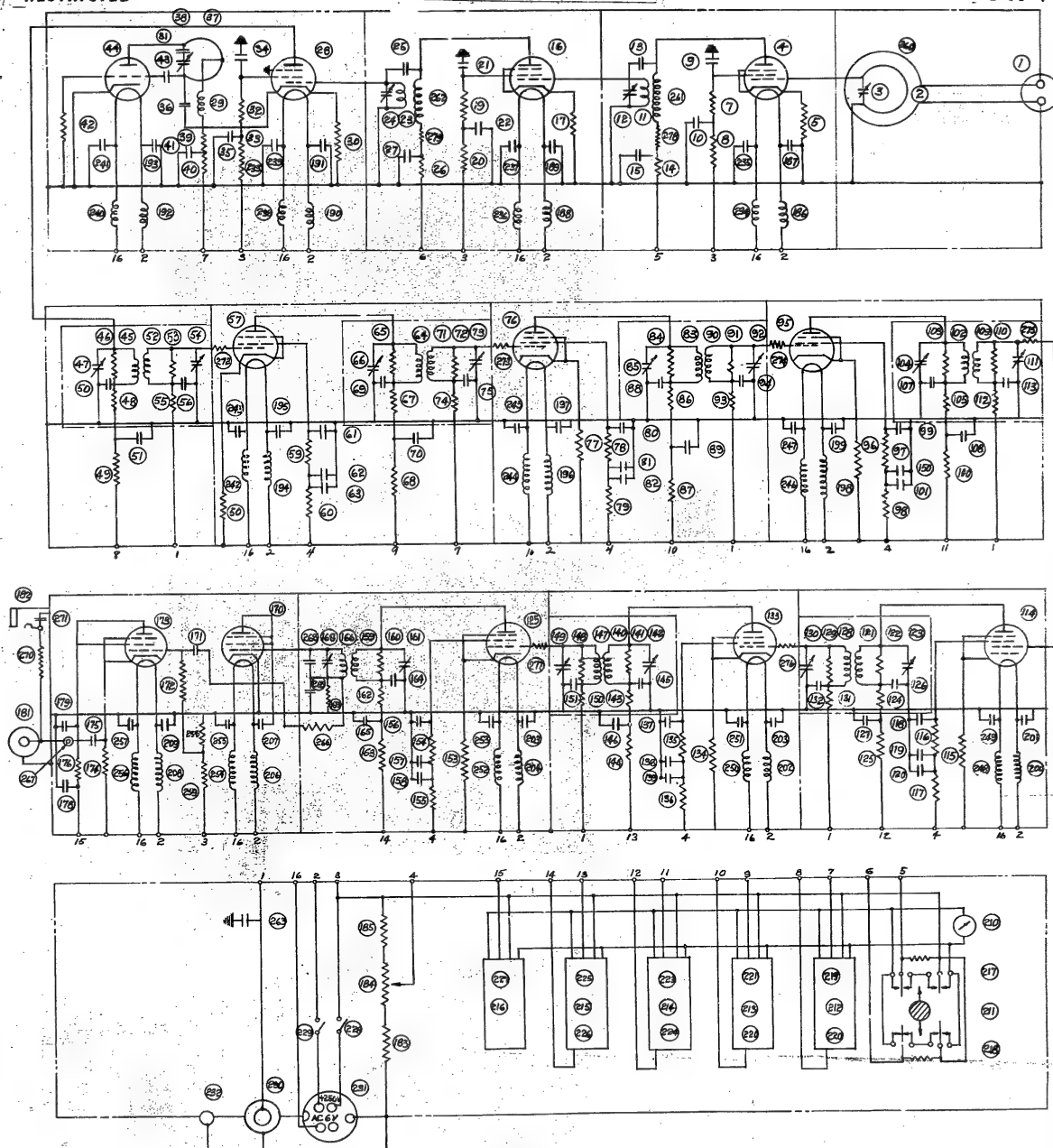
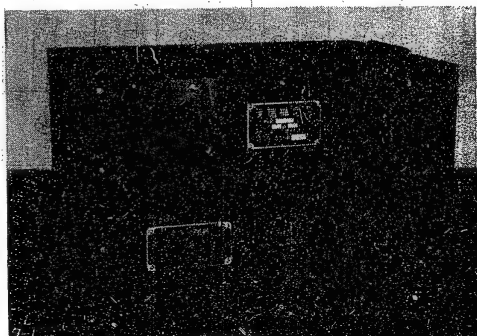
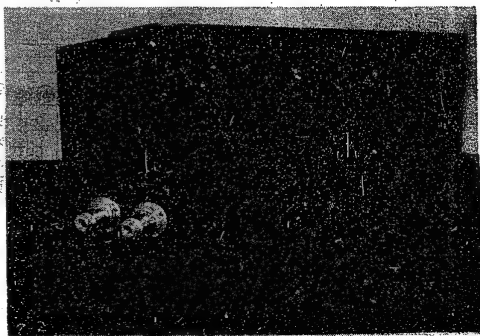


Figure 7(G)
RECEIVER

ENCLOSURE (G), continued



Front View



Rear View

Figure 8(G)

RECEIVER POWER SUPPLY PHOTO

ENCLOSURE (G), continued

NO.	NAME	MINIMUM RATING	TYPE	NOTES
1	A.C. POWER SUPPLY JUNCTION PLUG/RECEPT			
2	POWER SUPPLY SWITCH			
3	POWER SUPPLY FUSEL	2 A.	ACMR	
4	POWER SUPPLY FUSEL	2 A.	ACMR	
5				
6				
7	PLATE POWER TRANSFORMER		500-0-500	
8	FLUORESCENT TUBELAMP		500-0-500	
9	RECTIFIER		500-0-500	
10				
11	RECTIFYING POWER SUPPLY TRANSFORMER	0 P.F.	500-0-500	
12	RECTIFYING POWER SUPPLY TRANSFORMER	0 P.F.	500-0-500	
13	POWER SUPPLY SWITCH	2 A.	ACMR	
14	RECTIFYING POWER SUPPLY TRANSFORMER	0 P.F.	500-0-500	
15	RECTIFYING POWER SUPPLY TRANSFORMER	0 P.F.	500-0-500	
16	RECTIFYING POWER SUPPLY TRANSFORMER	0 P.F.	500-0-500	
17	RECTIFYING POWER SUPPLY TRANSFORMER	0 P.F.	500-0-500	

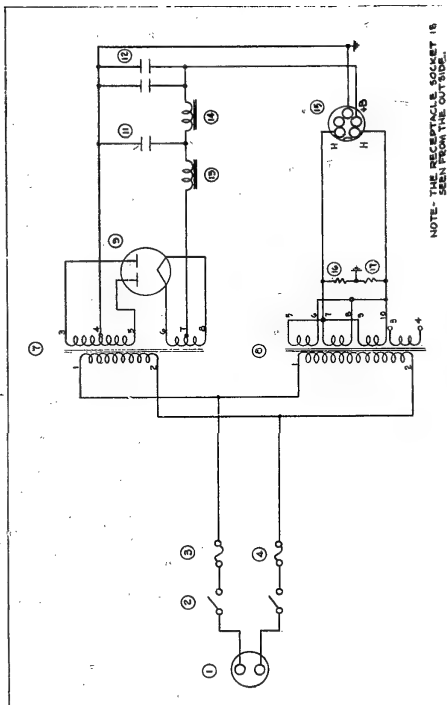
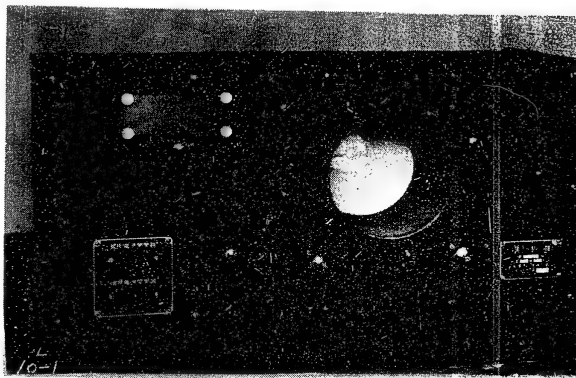
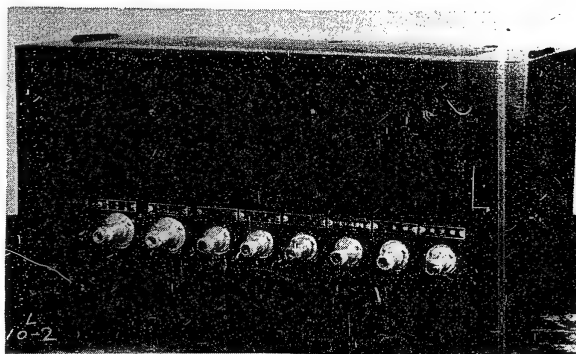


Figure 9(G)
RECEIVER POWER SUPPLY

ENCLOSURE (G), continued



Front View



Rear View

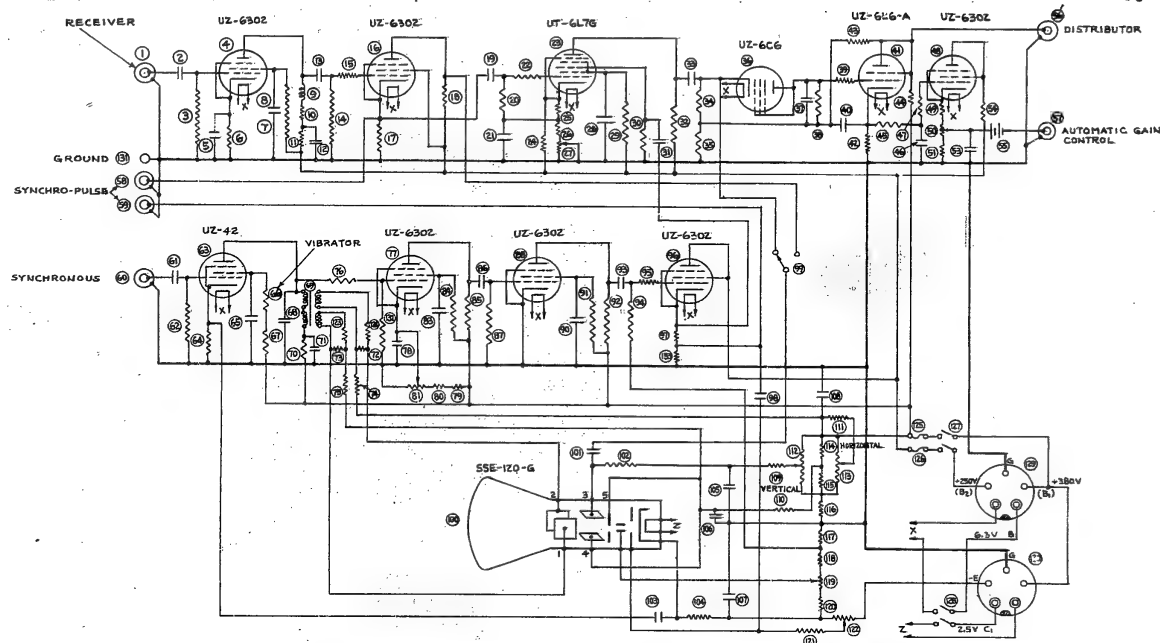
Figure 10(G)

INDICATOR SEARCH RANGE

RESTRICTED

ENCLOSURE (G), continued

E-03



Nº	DESCRIPTION *	RATING	MODEL	QUAN- TITY	INDICATION
1			NG-4T53	1	
2		0.1 µF	M-60	1	RKS-10364
3		100 KΩ	C-2	1	
4				1	U2
5		2 µF	P-26-F	5	RKS-10364
6		300 Ω	C-2	1	
7		1 µF	KOD-1010	1	RKS-10367
8		75 KΩ	C-2	1	
9		0.1 MΩ	AG-15	1	
10		3 KΩ	C-2	1	
11		2 KΩ	"	1	
12		1 µF	KOD-1010	1	RKS-10367
13		0.1 µF	M-60	1	RKS-10364
14		10 KΩ	C-2	1	
15		50 Ω	"	1	
16		1 KΩ	C-2	1	U2
17		5 KΩ	"	1	
18		0.1 µF	M-60	1	RKS-10364
19		10 KΩ	C-2	1	
20		1 µF	KOD-1010	1	RKS-10367
21		50 Ω	C-2	1	
22				1	U2
23		40 KΩ	C-2	1	
24		200 Ω	"	1	
25		3 KΩ	"	1	
26		10 KΩ	NV-200SA	1	RKS-10362
27		1 µF	KOD-1010	1	RKS-10367
28		100 KΩ	C-2	1	
29		0.01 µF	M-60	1	RKS-10364
30		30 KΩ	C-2	1	
31		0.1 µF	M-60	1	RKS-10364
32		100 KΩ	C-2	1	
33		1 MΩ	"	1	
34		0.002	M-60	1	RKS-10364
35		4 MΩ	C-2	1	
36		50 Ω	"	1	
37		2 µF	P-26-F	1	RKS-10364
38		1 KΩ	C-2	1	U2
39		10 MΩ	"	1	
40		10 KΩ	10W	1	
41		1 MΩ	C-2	1	
42		0.1 µF	M-60	1	RKS-10364
43		50 Ω	C-2	1	
44		2 KΩ	C-2	1	U2
45		1 KΩ	NV-200SA	1	RKS-10362

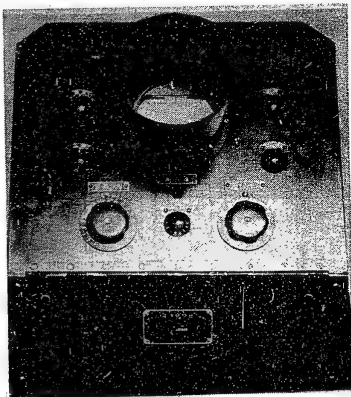
Nº	DESCRIPTION *	RATING	MODEL	QUAN- TITY	INDICATION
51		1 KΩ	C-2	1	
52		5 KΩ	"	1	
53		2 µF	P-26-F	4	RKS-10364
54		55 KΩ	C-2	1	
55		4.5V	C-2	1	NA-4753
56				1	
57				1	
58				1	
59				1	
60				1	
61		0.05 µF	M-60	1	RKS-10364
62		500 KΩ	C-2	1	
63				1	U2
64		1 KΩ	C-2	1	
65		1 µF	KOD-1010	1	RKS-10367
66		100 KΩ	NV-200SA	1	RKS-10362
67		20 KΩ	C-2	1	
68		0.01 µF	M-60	1	RKS-10364
69		0.2	DK-7923	1	
70		10 KΩ	C-2	1	
71		1 µF	KOD-1010	1	RKS-10367
72		25 KΩ	D-025	1	
73		"	"	1	
74		100 KΩ	C-2	1	
75		500 KΩ	"	1	
76				1	U2
77		1 µF	KOD-1010	1	RKS-10367
78		30 KΩ	C-2	1	
79		50 KΩ	"	1	
80		50 KΩ	2H-55B	1	
81		1 µF	KOD-1010	1	RKS-10367
82		20 KΩ	C-2	1	
83		50 KΩ	"	1	
84		20 PF	"	1	NEC
85		5 KΩ	C-2	1	U2
86				1	
87				1	
88				1	
89				1	
90				1	
91		100 KΩ	C-2	1	
92		30 KΩ	"	1	
93		0.1 µF	M-60	1	RKS-10364
94		100 KΩ	C-2	1	
95		50 Ω	"	1	
96		5 KΩ	C-2	1	U2
97		0.1 µF	M-60	1	RKS-10364
98		400-N	NEM-01799	1	

Nº	DESCRIPTION *	RATING	MODEL	QUAN- TITY	INDICATION
101		0.1 µF	M-60	1	RKS-10364
102		500 KΩ	C-2	1	
103		1 µF	M-60	1	RKS-10364
104		100 KΩ	C-2	1	
105		1 µF	KOD-1010	1	RKS-10367
106		"	"	1	
107		0.1 µF	M-60	1	RKS-10364
108		1 µF	KOD-1010	1	RKS-10367
109		1 MΩ	C-2	1	
110		"	"	1	
111		"	"	1	
112		500 KΩ	NV-200SA	1	RKS-10362
113		"	"	1	
114		30 KΩ	C-2	1	
115		"	"	1	
116		200 KΩ	"	1	
117		10 KΩ	"	1	
118		200 KΩ	"	1	
119		"	NV-200SA	1	RKS-10362
120		100 KΩ	C-2	1	
121		"	"	1	
122		30 KΩ	NV-200SA	1	RKS-10362
123		12.5 KΩ	D-025	1	
124		"	"	1	
125		"	"	1	N-1116
126		"	"	1	
127		"	"	1	# 3952
128		"	"	1	
129		5 Ω	"	1	50
130		"	"	1	
131		8033-NA	"	1	M-24954
132		500 KΩ	C-2	1	
133		0.5 KΩ	"	1	
134		"	"	1	

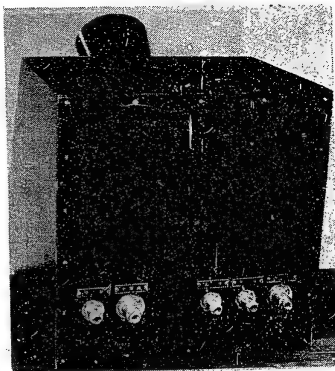
* NOTE: UNTRANSLATED, AS STANDARD
ELECTRICAL SYMBOLS ARE USED.

Figure 11(G)
INDICATOR SEARCH

ENCLOSURE (G), continued



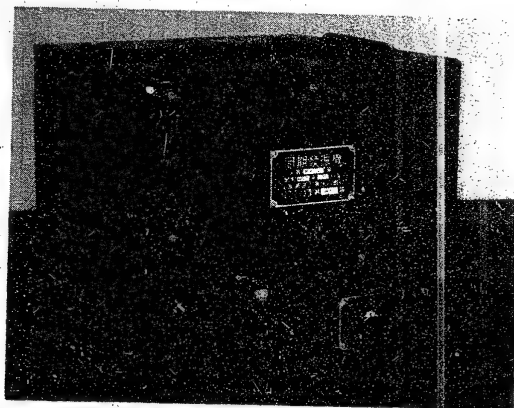
Front View



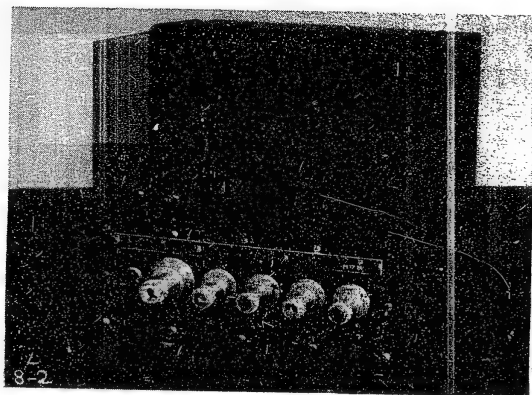
Rear View

Figure 12(G)
RANGE INDICATOR

ENCLOSURE (G), continued



Front View



Rear View

Figure 14(G)
SYNCHRONIZER PHOTO

ENCLOSURE (G), continued

WIRE NO.	DESCRIPTION	RATING	MODEL	TEST DATA
1	COAXIAL CABLE	CLF*	M-15	W-10541
2	MICA CONDENSER	1 P.A.	C-B	W-10542
3	FIBER RESISTANCE	100 P.A.	C-B	W-10543
4	SWALL OF CONDENSER	10 P.A.	W-10544	W-10547
5	100 P.A.	100 P.A.	W-10545	W-10548
6	100 P.A.	100 P.A.	W-10546	W-10549
7	100 P.A.	100 P.A.	W-10550	W-10551
8	100 P.A.	100 P.A.	W-10552	W-10553
9	100 P.A.	100 P.A.	W-10554	W-10555
10	100 P.A.	100 P.A.	W-10556	W-10557
11	100 P.A.	100 P.A.	W-10558	W-10559
12	100 P.A.	100 P.A.	W-10560	W-10561
13	100 P.A.	100 P.A.	W-10562	W-10563
14	100 P.A.	100 P.A.	W-10564	W-10565
15	100 P.A.	100 P.A.	W-10566	W-10567
16	100 P.A.	100 P.A.	W-10568	W-10569
17	100 P.A.	100 P.A.	W-10570	W-10571
18	100 P.A.	100 P.A.	W-10572	W-10573
19	100 P.A.	100 P.A.	W-10574	W-10575
20	100 P.A.	100 P.A.	W-10576	W-10577
21	100 P.A.	100 P.A.	W-10578	W-10579
22	100 P.A.	100 P.A.	W-10580	W-10581
23	100 P.A.	100 P.A.	W-10582	W-10583
24	100 P.A.	100 P.A.	W-10584	W-10585
25	100 P.A.	100 P.A.	W-10586	W-10587
26	100 P.A.	100 P.A.	W-10588	W-10589
27	100 P.A.	100 P.A.	W-10590	W-10591
28	100 P.A.	100 P.A.	W-10592	W-10593
29	100 P.A.	100 P.A.	W-10594	W-10595
30	100 P.A.	100 P.A.	W-10596	W-10597
31	100 P.A.	100 P.A.	W-10598	W-10599
32	100 P.A.	100 P.A.	W-10600	W-10601
33	100 P.A.	100 P.A.	W-10602	W-10603
34	100 P.A.	100 P.A.	W-10604	W-10605
35	100 P.A.	100 P.A.	W-10606	W-10607
36	100 P.A.	100 P.A.	W-10608	W-10609
37	100 P.A.	100 P.A.	W-10610	W-10611
38	100 P.A.	100 P.A.	W-10612	W-10613
39	100 P.A.	100 P.A.	W-10614	W-10615
40	100 P.A.	100 P.A.	W-10616	W-10617
41	100 P.A.	100 P.A.	W-10618	W-10619
42	100 P.A.	100 P.A.	W-10620	W-10621
43	100 P.A.	100 P.A.	W-10622	W-10623
44	100 P.A.	100 P.A.	W-10624	W-10625
45	100 P.A.	100 P.A.	W-10626	W-10627
46	100 P.A.	100 P.A.	W-10628	W-10629
47	100 P.A.	100 P.A.	W-10630	W-10631
48	100 P.A.	100 P.A.	W-10632	W-10633
49	100 P.A.	100 P.A.	W-10634	W-10635
50	100 P.A.	100 P.A.	W-10636	W-10637

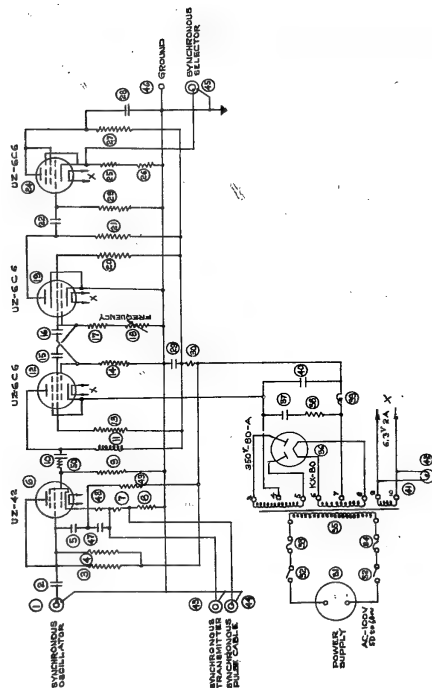
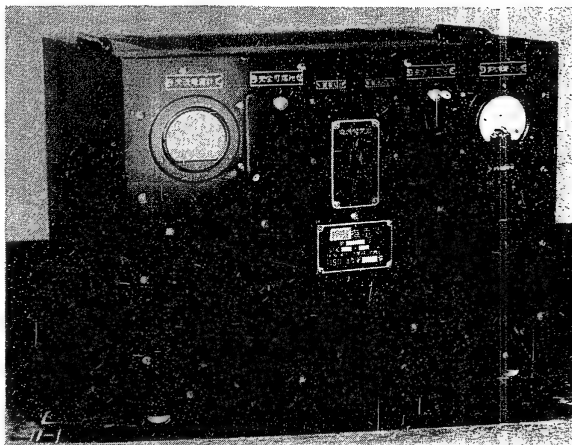
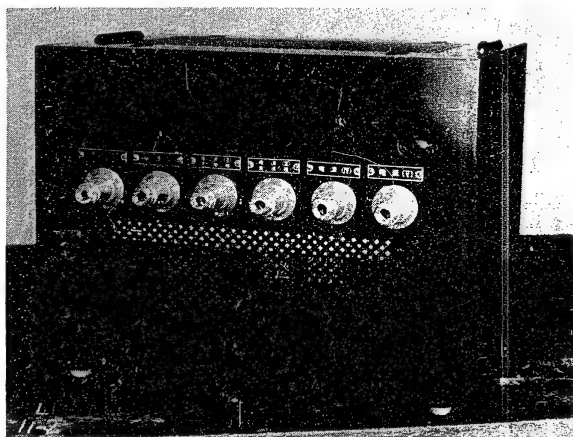


Figure 15(G)
SYNCHROTRONIZER

ENCLOSURE (G), continued



Front View



Rear View

Figure 16(G)

INDICATOR POWER SUPPLY PHOTO

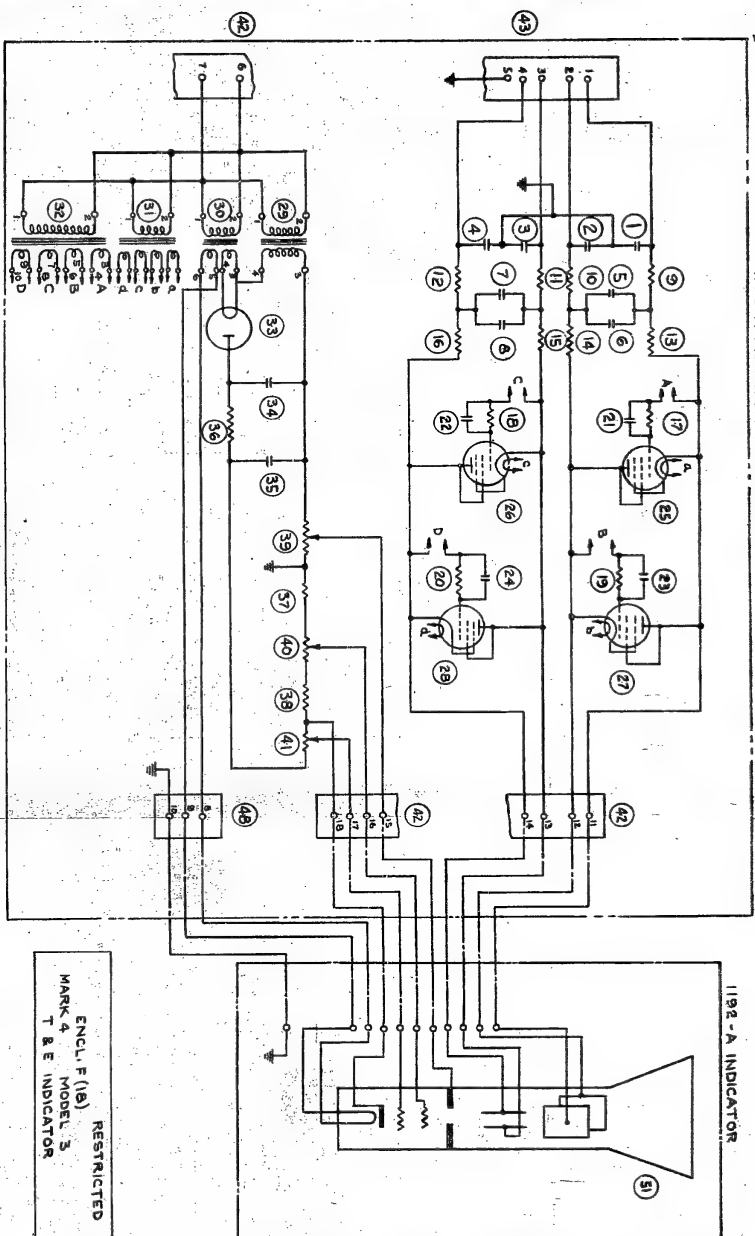


Figure 1B(G)
T AND E INDICATOR

60

RESTRICTED
ENCL. F (1B)
MARK 4 MODEL 3
T & E INDICATOR

NO.	DESCRIPTION	RATING	TYPE	QUANTITY
1	CONVERTER DISTRIBUTOR	CLIP (100V)	M-60	1
2	"	"	"	1
3	"	"	"	1
4	"	"	"	1
5	"	"	"	1
6	"	"	"	1
7	"	"	"	1
8	"	"	"	1
9	"	"	"	1
10	"	"	"	1
11	"	"	"	1
12	"	"	"	1
13	"	"	"	1
14	"	"	"	1
15	"	"	"	1
16	"	"	"	1
17	RESISTANCE	400 K.A.	D-2	1
18	"	"	"	1
19	"	"	"	1
20	"	"	"	1
21	BY PASS CONDENSER	0.5 MFD 400V	KOD-510	1
22	"	"	"	1
23	"	"	"	1
24	"	"	"	1
25	"	"	"	1
26	"	"	"	1
27	"	"	"	1
28	"	"	"	1
29	"	"	"	1
30	"	"	"	1
31	"	"	"	1
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147	"	"	"	1
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149	"	"	"	1
150	"	"	"	1
151	"	"	"	1
152	"	"	"	1
153	"	"	"	1
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157	"	"	"	1
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177	"	"	"	1
178	"	"	"	1
179	"	"	"	1
180	"	"	"	1
181	"	"	"	1
182	"	"	"	1
183	"	"	"	1
184	"	"	"	1
185	"	"	"	1
186	"	"	"	1
187	"	"	"	1
188	"	"	"	1
189	"	"	"	1
190	"	"	"	1
191	"	"	"	1
192	"	"	"	1
193	"	"	"	1
194	"	"	"	1
195	"	"	"	1
196	"	"	"	1
197	"	"	"	1
198	"	"	"	1
199	"	"	"	1
200	"	"	"	1

ENCLOSURE (G), continued

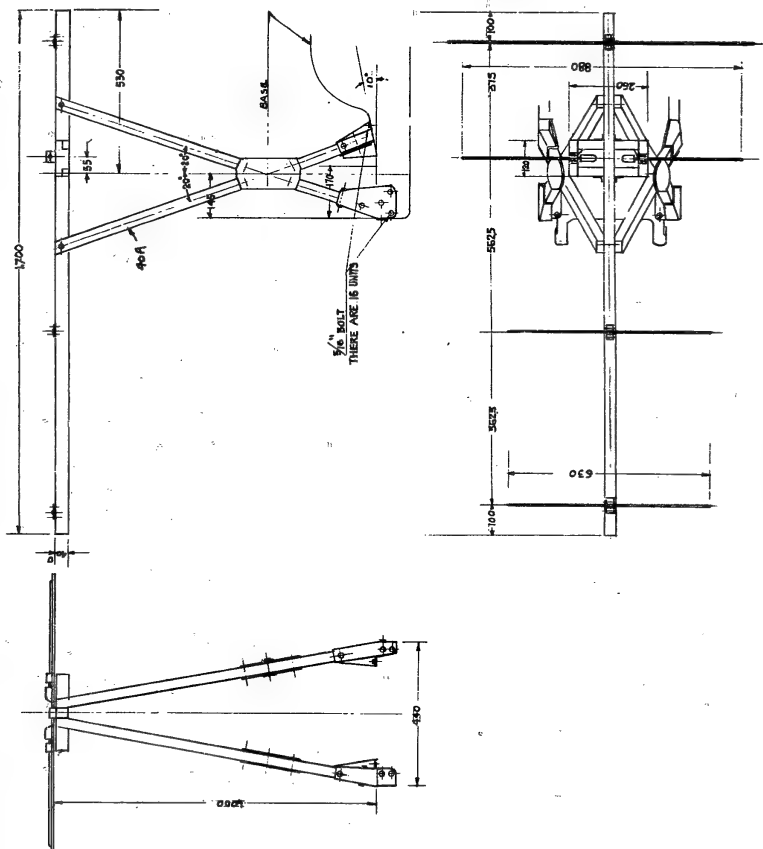


Figure 19(G)
ANTENNA - TRANSMITTER

ENCLOSURE (G), continued

Position in Which Phase
Ring is Attached (In an
actual installation it
can be substituted in
place of A.)

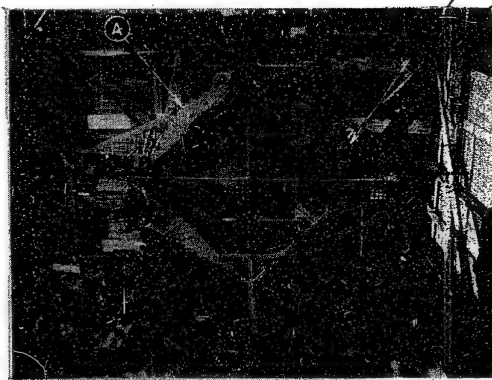


Figure 20(G)
RECEIVING ANTENNA

ENCLOSURE (G), continued

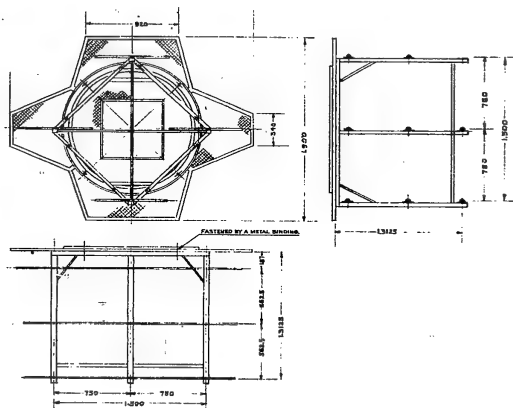


Figure 21(G)
RECEIVING ANTENNA

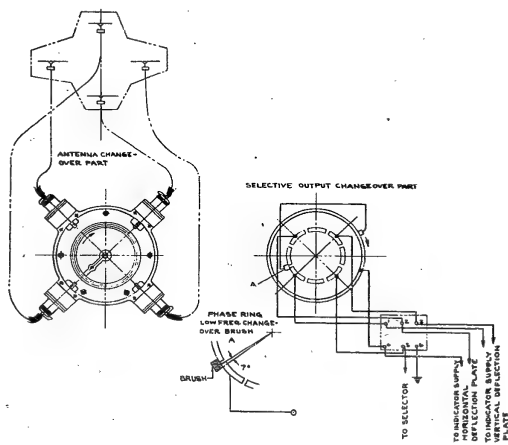
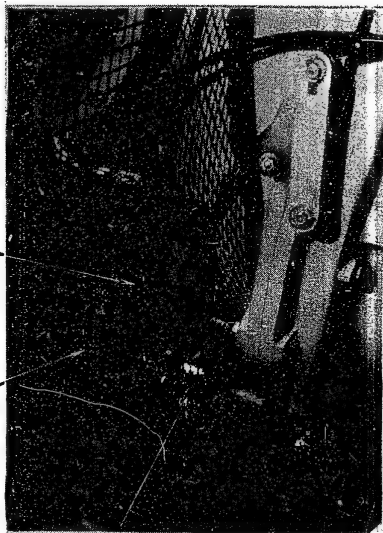


Figure 22(G)
RECEIVING ANTENNA LOBE SWITCHER

ENCLOSURE (G), continued

Impedance Matching Unit (Installation shown is impossible. The antenna points downward, that is opposite to what is shown.)

High Frequency Cable

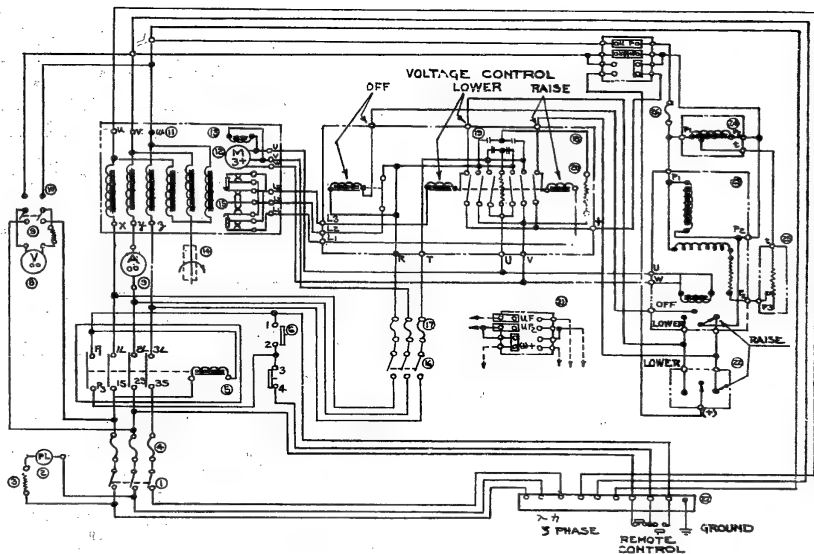


To Phasing Ring

Impedance Matching Unit

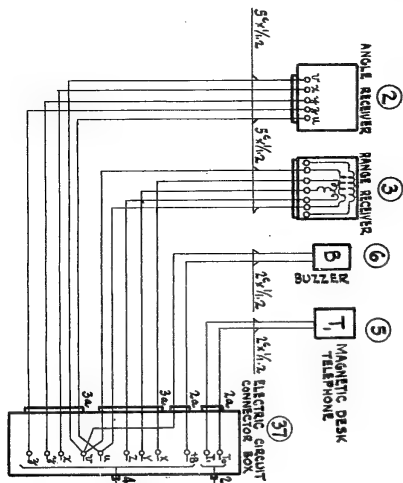
Figure 23(G)
IMPEDANCE MATCHING UNIT DETAILS

ENCLOSURE (G), continued



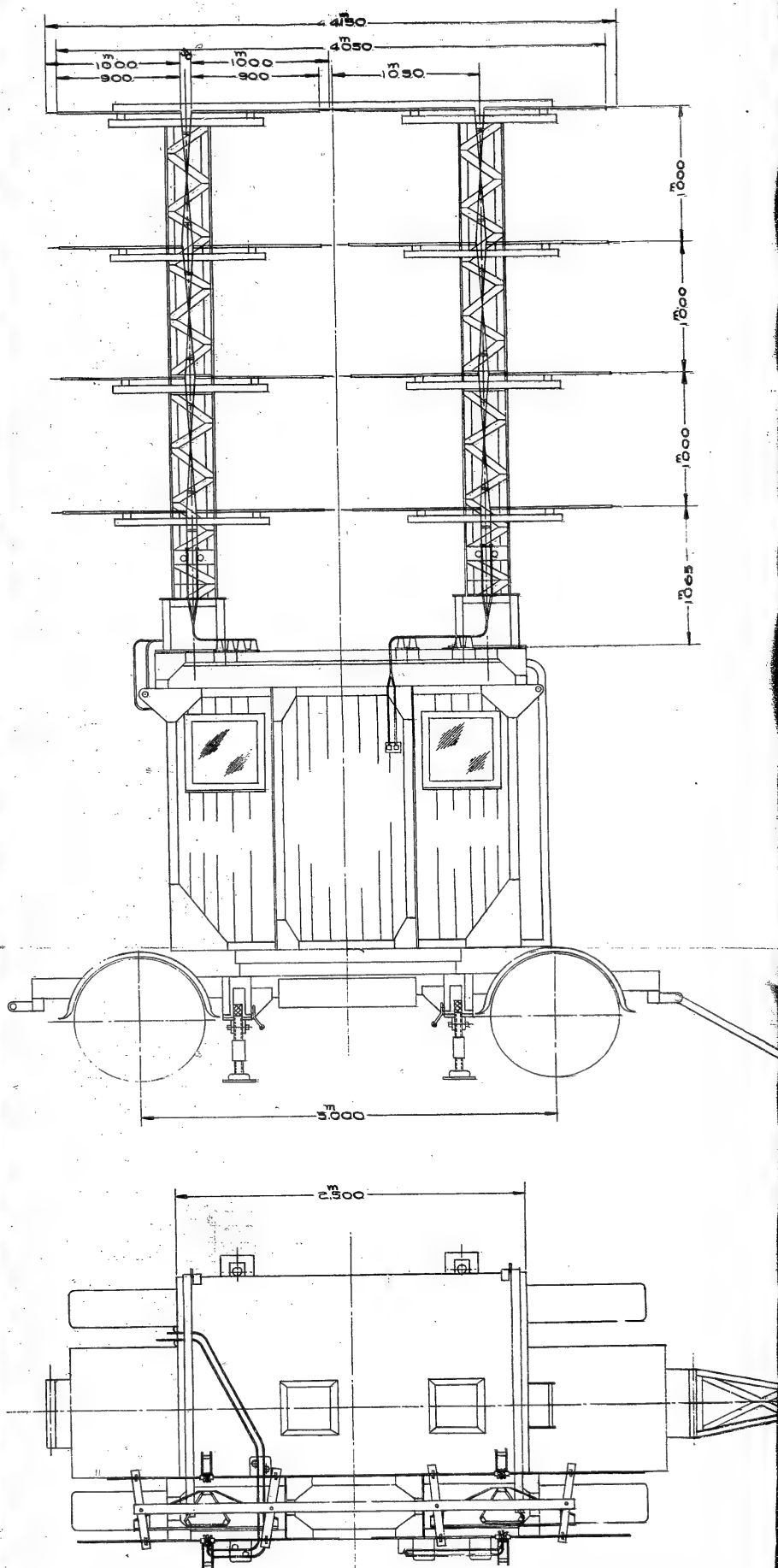
NO.	NAME	QTY	NOTES	NO.	NAME	QTY	NOTES
1	PRINCIPAL POWER SUPPLY SWITCH.	1	250°30°A	15	LIMIT SWITCH FOR (11)	1	
2	POWER SUPPLY PILOT LIGHT.	1	250°V 1/16	16	POWER SUPPLY SWITCH FOR (12).	1	250°3A
3	SERIES RHEOSTAT, SAME USE AS ABOVE.	1	250°56-100	17	SAFETY FUSE	3	250°3A
4	PRINCIPAL POWER SUPPLY SAFETY FUSE.	3	250°25°A	18	ELECTRO-MAGNETIC SWITCH TO CONTROL (12)	1	AVS ±
5	PRINCIPAL POWER SUPPLY MAGNETIC SWITCH	1	250°30°A	19	CONDENSER FOR PREVENTING ARC OF ABW SWITCH	4	0.1uf R200
6	PUSH BUTTON SWITCH, SAME USE AS ABOVE.	1		20	CONDENSER FOR PREVENTING ARC IN RESISTOR	2	250°3A-10
7	PRINCIPAL POWER SUPPLY AMMETER.	1	AC 25A	21	AUTOMATIC & HAND OPERATED COMMUTATOR	1	
8	PRINCIPAL POWER SUPPLY VOLTMETER.	1	AC 300V	22	SWITCH FOR HAND OPERATED USE	1	
9	MULTIPLIER, SAME USE AS ABOVE.	1		23	AUTOMATIC VOLTAGE-ADJUSTOR CONDENSER	1	ANRY
10	PRINCIPAL POWER SUPPLY METER, SELECTOR SWITCH	1		24	TRANSFORMER FOR ABOVE	1	225V 1/16 VA
11	ILLEGIBLE.	1	3/16VAV 1/16	25	ADJUSTABLE RESISTANCE FOR ABOVE	1	12°
12	CONTROL MOTOR, SAME AS ABOVE.	1	3/16 50W	26	FUSE FOR ABOVE	1	250°1A
13	ELECTROMAGNETIC BRAKE, SAME AS ABOVE.	1		27	OUTPUT TERMINALS.	1	
14	CONTROL LEVER FOR (11).	1					

Figure 24(G)
VOLTAGE REGULATOR

☐ T MAGNETIC DESK[illegible]

67

37	ELECT. CURRENT CONNECTOR BOX	
38	ELECT. CURRENT CONNECTOR BOX	
39	ELECT. CURRENT SELECTOR SWITCH	
40	ANTENNA 2 LINE 4 STAGE	
41	ANTENNA INSULATOR	
42	DISCHARGE TUBE	
43	SPECIAL DISCHARGE TUBE	
44	HIGH FREQUENCY CABLE	
45	MARK CORD	
46	ELECT. WIRE INSULATOR	



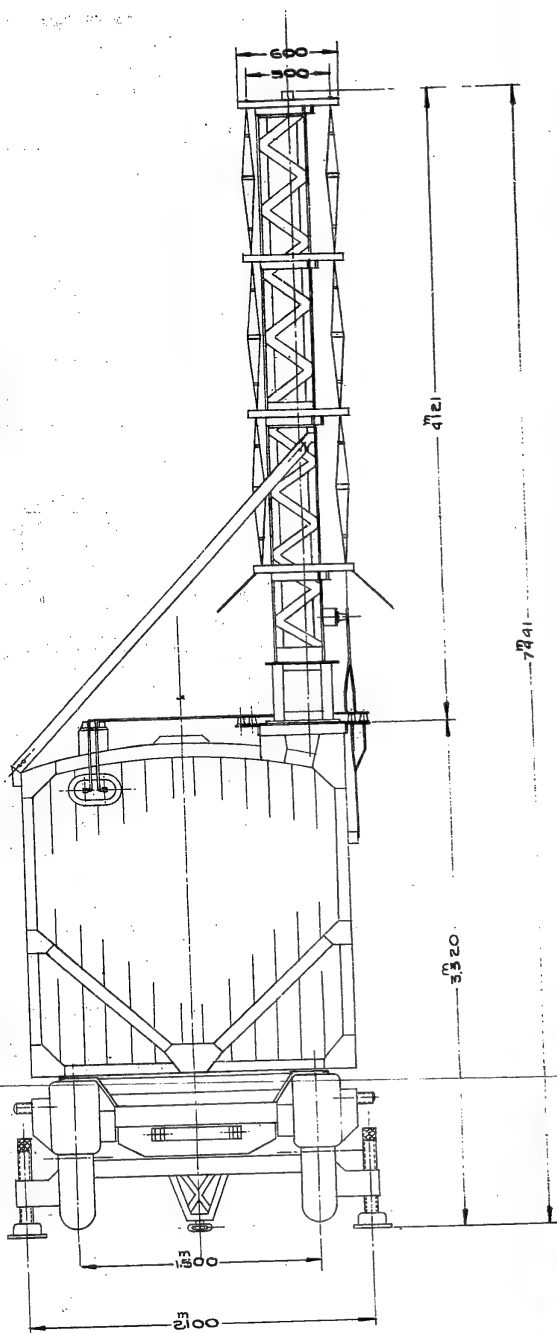


Figure 2(H)
OUTLINE

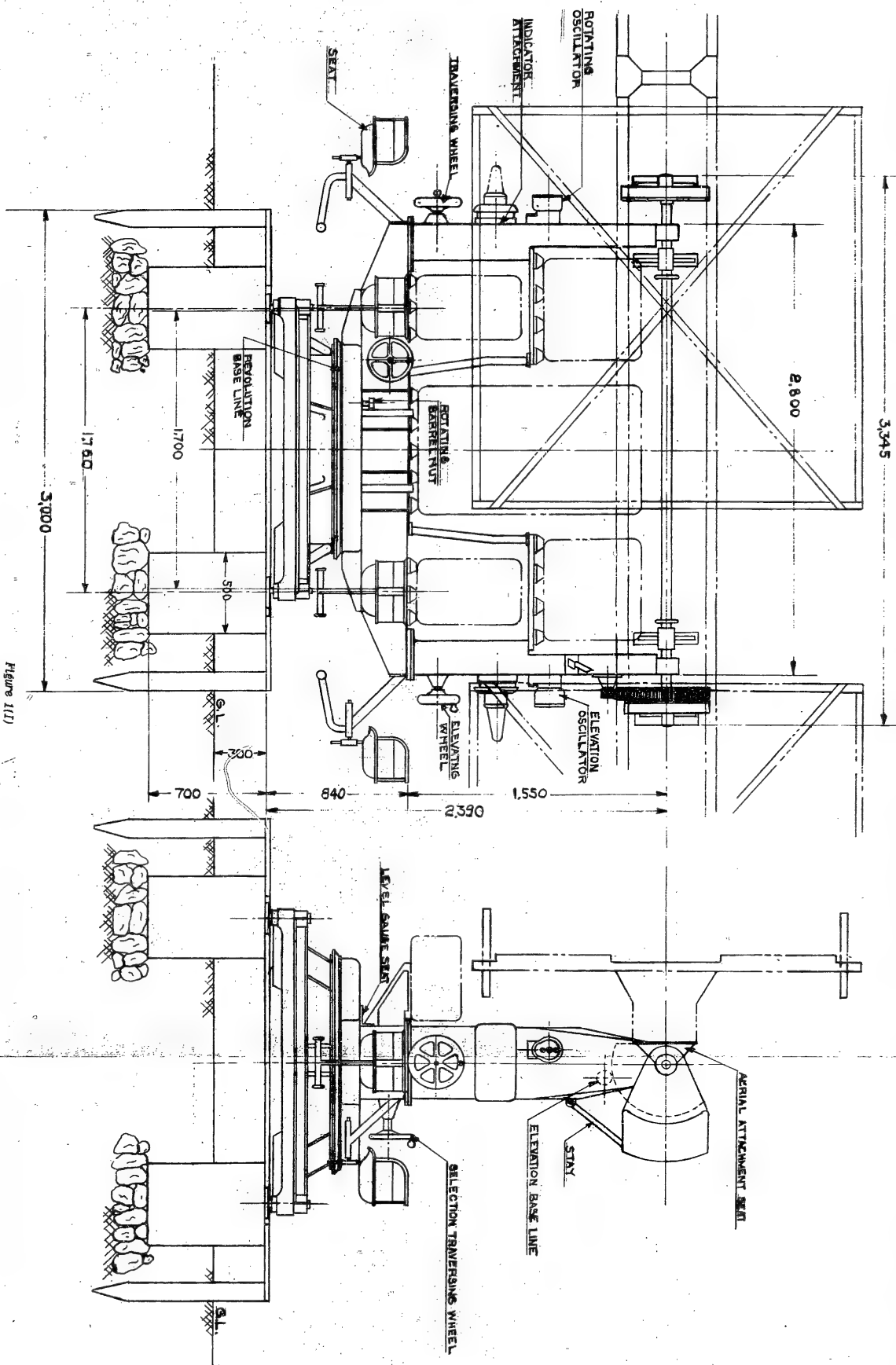
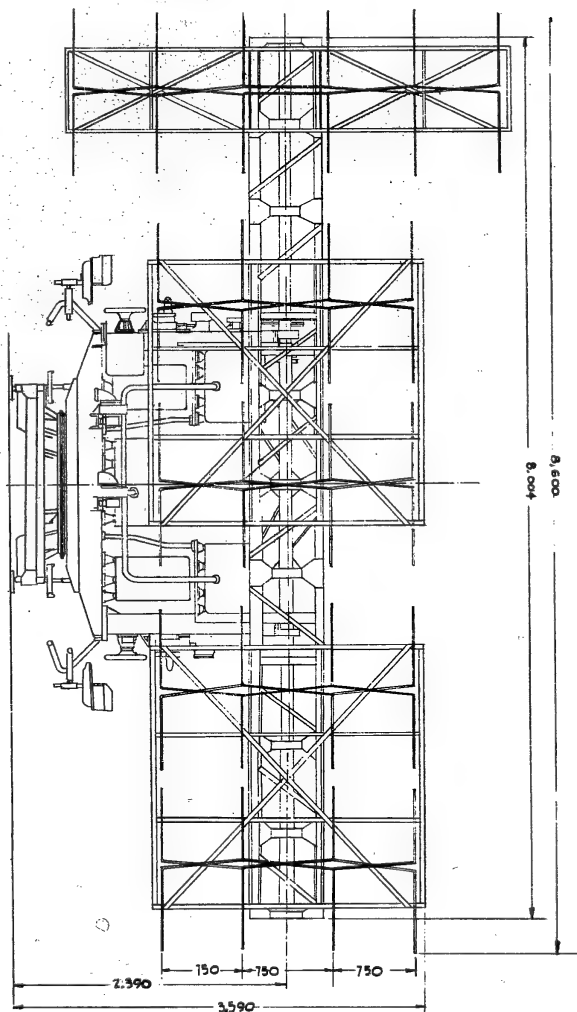


Figure 111
OUTLINE

ENCLOSURE (I), continued



VINCENT
1716 4/10/14

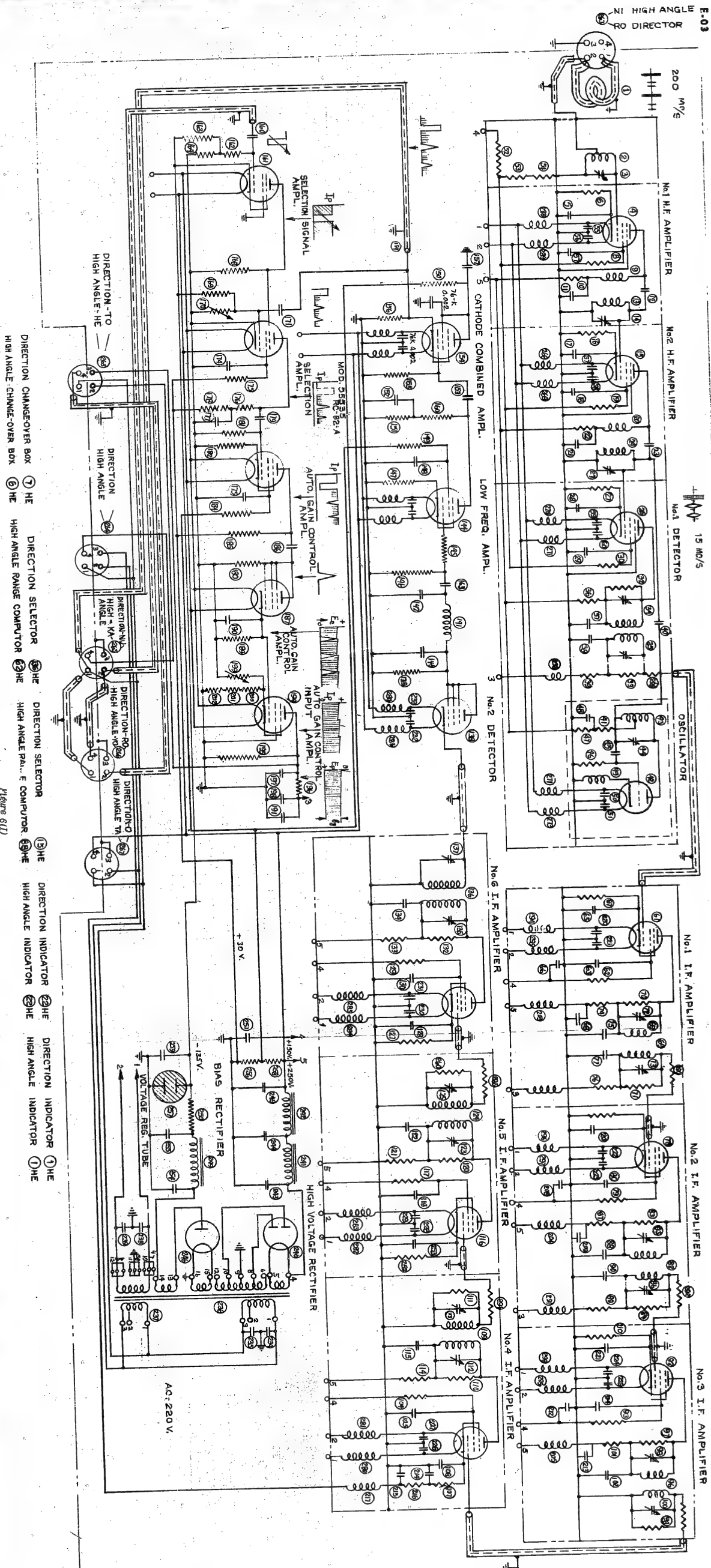


Figure 6(1)

RECEIVER

ENCLOSURE (I), continued.

NO.	MODE TYPE	INDEX	RATINGS	DESCRIPTION
1	M-60	MK12557	0.1M/1000	CABLE HEAD
2	M-60	"	0.05M/1000	"
3	M-60	"	100 K Ω	"
4	NY-200-S	RIKEN	1K Ω	CABLE HEAD
5	U-50	RIKENOHM	1K Ω	RESISTOR
6	KOD-510	NTK	0.5M/1000	CABLE HEAD
7	KOD-510	NTK	2M/1000	CABLE HEAD
8	KOD-510	"	100 K Ω	RESISTOR
9	C-3	RIKENOHM	100 K Ω	RESISTOR
10	C-3	"	0.05M/1000	CABLE HEAD
11	M-60	NTK	0.05M/1000	CABLE HEAD
12	C-3	RIKENOHM	500 K Ω	RESISTOR
13	55-E-7E-G	"	0.5M/1000	PILOT LAMP
14	KOD-510	NTK	0.05M/1000	CABLE HEAD
15	KOD-510	NTK	0.05M/1000	CABLE HEAD
16	KOD-510	NTK	0.05M/1000	CABLE HEAD
17	C-3	RIKENOHM	100 K Ω	RESISTOR
18	C-3	"	"	"
19	KOD-510	NTK	1M/1000	CABLE HEAD
20	C-3	RIKENOHM	500 K Ω	RESISTOR
21	C-3	MK12557	"	"
22	C-3	"	"	"
23	KOD-510	NTK	0.3M/1000	CABLE HEAD
24	"	"	"	"
25	NY-200-S	RIKEN	100 K Ω	CABLE HEAD
26	"	"	500K/2.5T	TRANSFORMER
27	2402-5A-51	DK-7816	500K/2.5T	TRANSFORMER
28	C-3	RIKENOHM	100 K Ω	RESISTOR
29	KX-14E	NTK	0.5M/1000	CABLE HEAD
30	C-3	RIKENOHM	100 K Ω	RESISTOR
31	C-3	RIKENOHM	100 K Ω	RESISTOR
32	NY-200-S	"	50 K Ω	RESISTOR
33	C-3	"	50 K Ω	RESISTOR
34	KOD-510	NTK	0.5M/1000	CABLE HEAD
35	KOD-510	NTK	0.5M/1000	CABLE HEAD
36	KOD-510	NTK	0.5M/1000	CABLE HEAD
37	NY-200-S	RIKEN	200 K Ω	RESISTOR
38	C-3	RIKENOHM	500 K Ω	RESISTOR
39	20P-3V-E	DK-8104	6.3V-1A	TRANSFORMER
40	51T-13-11	KOD-510	0.05M/1000	CABLE HEAD

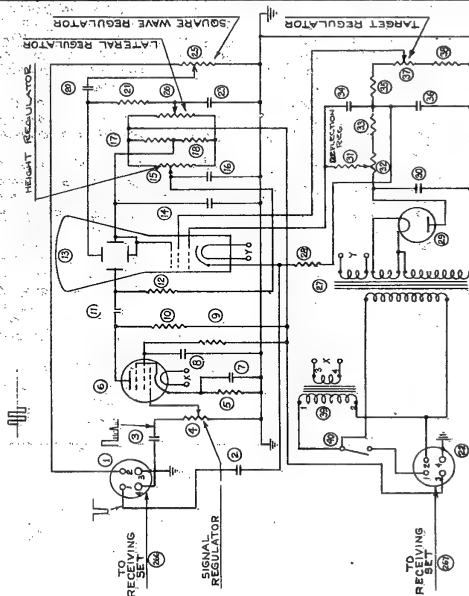
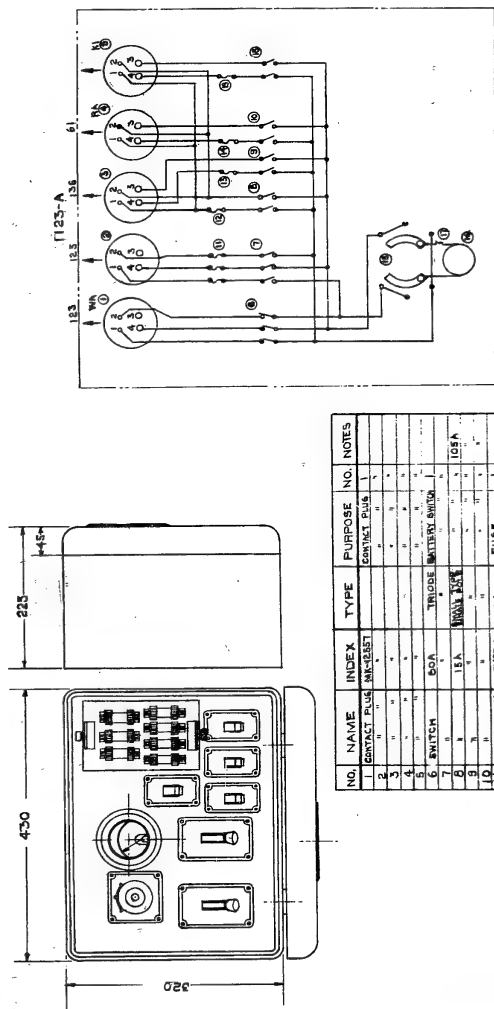


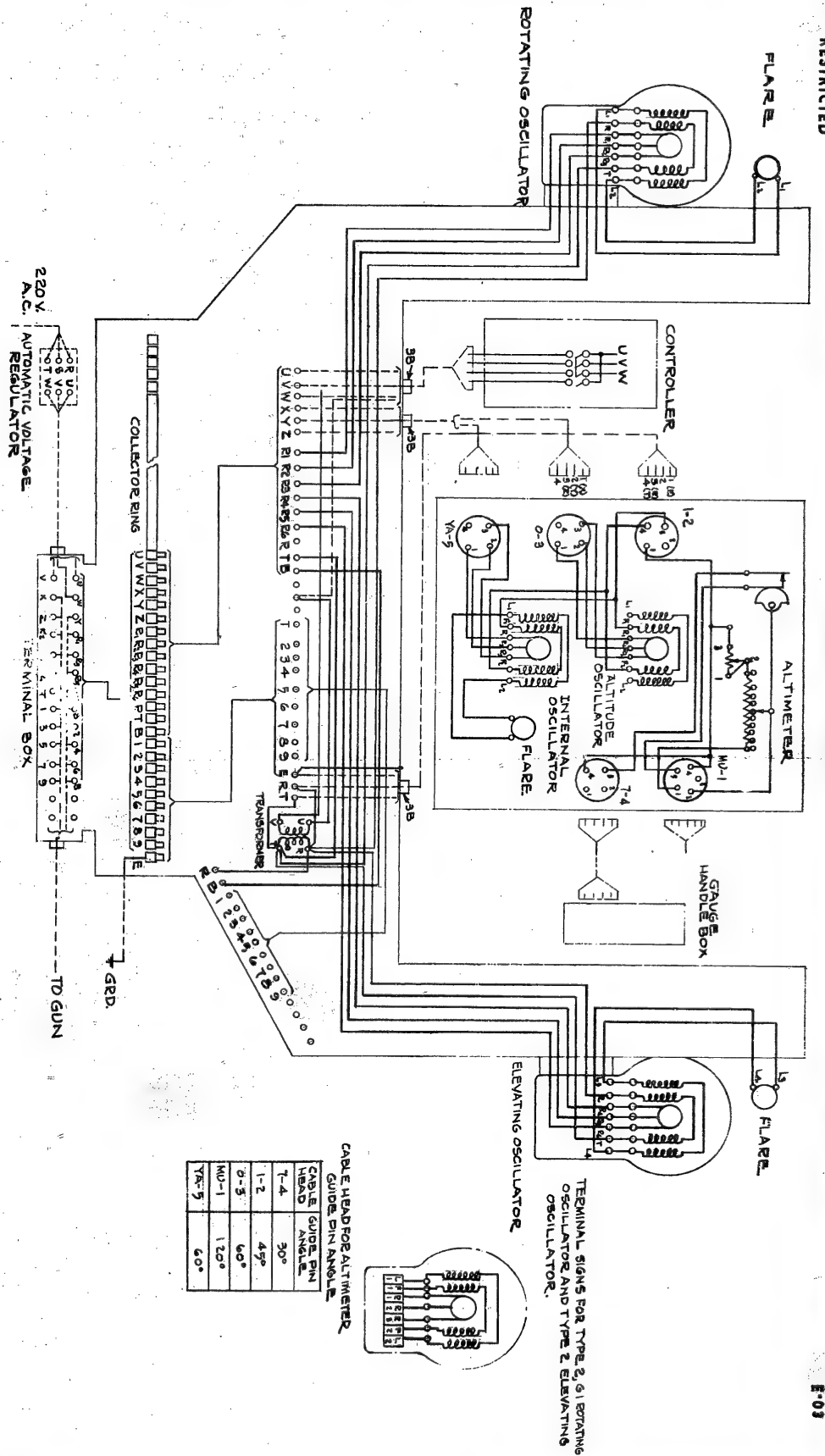
Figure 8(1)
INDICATOR

ENCLOSURE (I), continued



NO.	NAME	INDEX	TYPE	PURPOSE	NO.	NOTES
1	CONTACT PLUG	NN-235T		CONTACT PLUG	1	
2	"	"		"	"	
3	"	"		"	"	
4	"	"		"	"	
5	SWITCH	80A	TRIPPO	TRIPPO SWITCH	1	
6	"	15A	TRIPPO	TRIPPO SWITCH	1	105A
7	"	15A	TRIPPO	TRIPPO SWITCH	1	
8	"	15A	TRIPPO	TRIPPO SWITCH	1	
9	"	15A	TRIPPO	TRIPPO SWITCH	1	
10	NAV STANDARD	TYPE 1		FUSE	1	
11	"	TYPE 2		"	"	
12	"	TYPE 3		"	"	
13	"	TYPE 4		"	"	
14	"	TYPE 5		"	"	
15	15-20-25	250V		MULTIPURPOSE		
16	CO-25	250V		MULTIPURPOSE		
17	SWITCH	15A	TRIPPO	TRIPPO SWITCH	1	105A
18	NAV STANDARD	TYPE 1		FUSE	1	

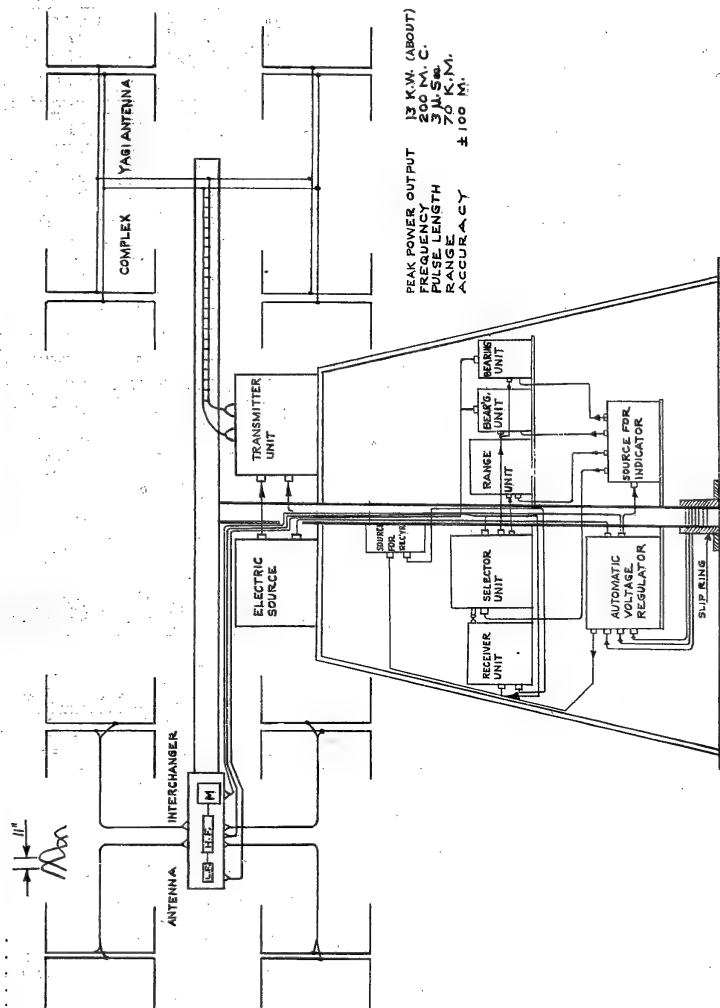
Figure 11(1)
POWER CONTROL UNIT



CABLE HEAD FOR ALTIMETER	GUIDE PIN ANGLE	GUIDE PIN ANGLE
1-4	30°	30°
1-2	45°	45°
0-3	60°	60°
MD-1	120°	120°
YS-5	60°	60°

Figure 13(1)
SYNCHRO DATA TRANSMITTER

ENCLOSURE (J)

Figure 1(J)
OUTLINE

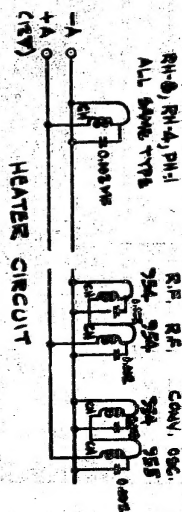
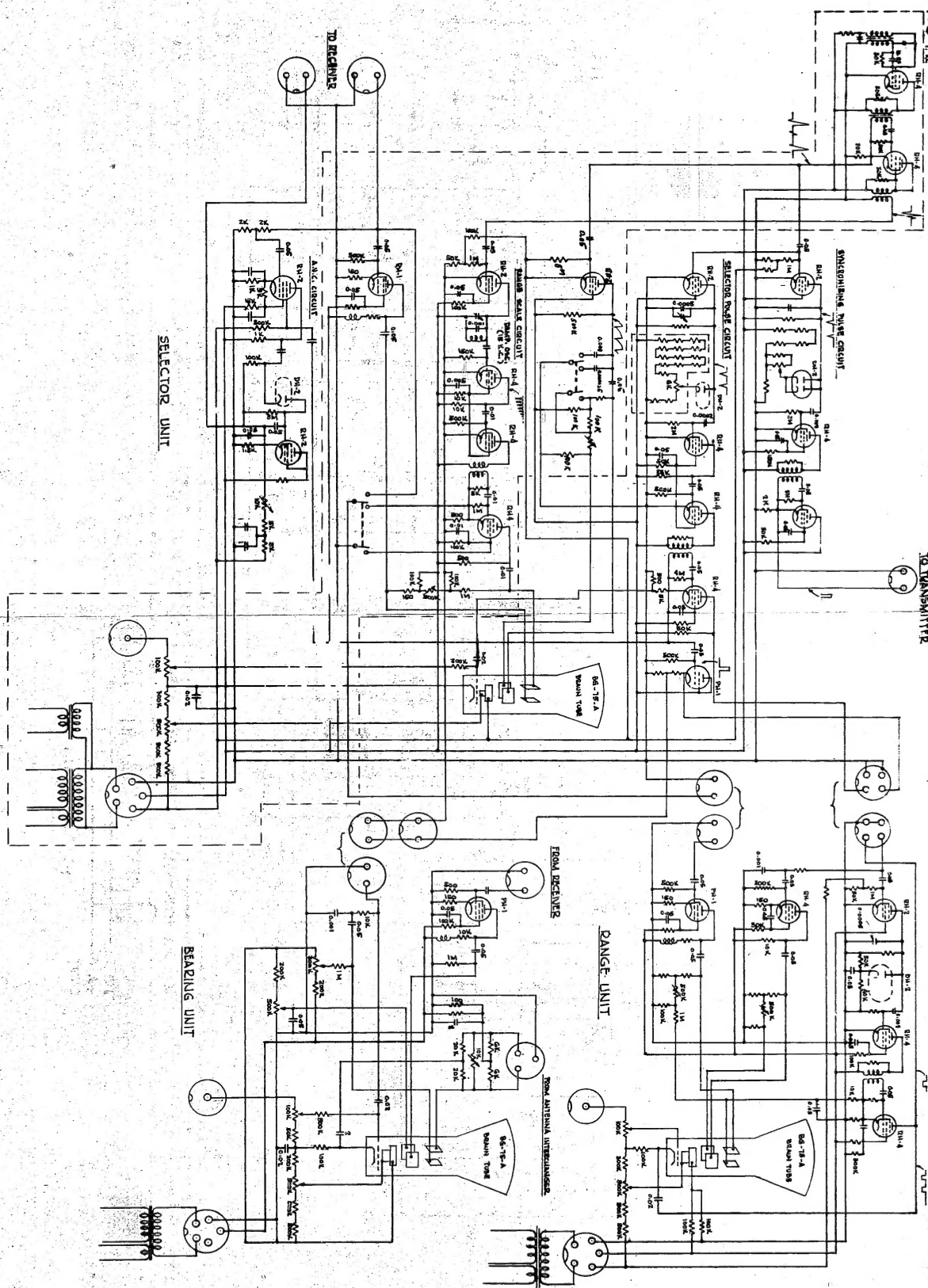


Figure 2(J)
RECEIVED

Figure 3(a)
INDICATOR

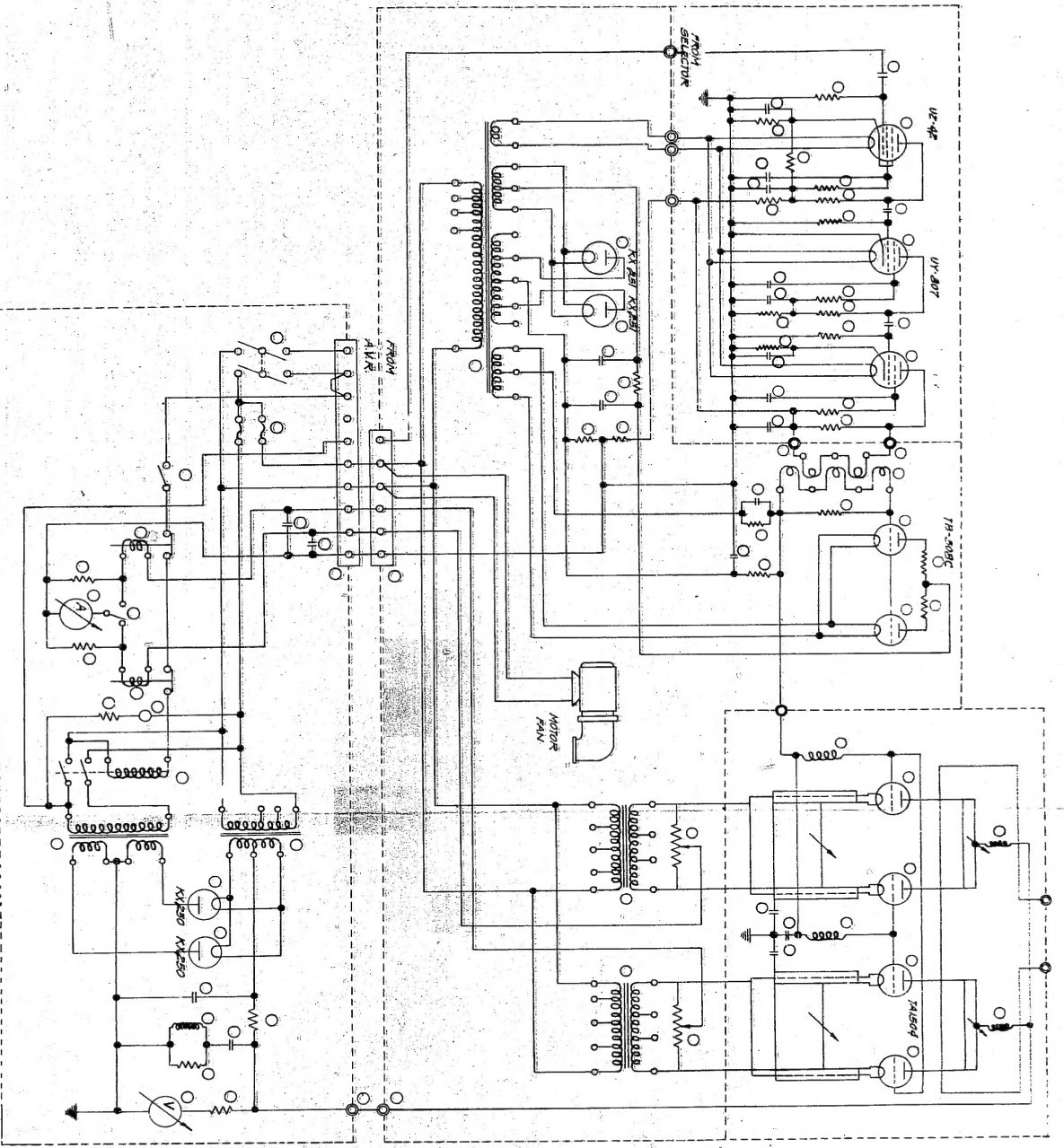


Figure 4(J)
TRANSMITTER

ENCLOSURE (K)

SUMMARY OF JAPANESE RADAR

RESTRICTED

A. LIFE-SPAN MODEL									
No.	Model	Object	Interpretation	Remarks	Installations	Preparation	Cost (US\$)	Life Span (Years)	Operational Details
1	Model-1	Long term anti-air warfare	1947-1	1947-1	In use	1947-1	1947-1	1947-1	High-velocity anti-air warfare
2	Model-2	Anti-air warfare	1947-2	1947-2	Experimental	1947-2	1947-2	1947-2	High-velocity anti-air warfare
3	Model-3	Anti-air warfare	1947-3	1947-3	Experimental	1947-3	1947-3	1947-3	High-velocity anti-air warfare
4	Model-4	Anti-air warfare	1947-4	1947-4	Experimental	1947-4	1947-4	1947-4	High-velocity anti-air warfare
5	Model-5	Anti-air warfare	1947-5	1947-5	Experimental	1947-5	1947-5	1947-5	High-velocity anti-air warfare
6	Model-6	Anti-air warfare	1947-6	1947-6	Experimental	1947-6	1947-6	1947-6	High-velocity anti-air warfare
7	Model-7	Anti-air warfare	1947-7	1947-7	Experimental	1947-7	1947-7	1947-7	High-velocity anti-air warfare
8	Model-8	Anti-air warfare	1947-8	1947-8	Experimental	1947-8	1947-8	1947-8	High-velocity anti-air warfare
9	Model-9	Anti-air warfare	1947-9	1947-9	Experimental	1947-9	1947-9	1947-9	High-velocity anti-air warfare
10	Model-10	Anti-air warfare	1947-10	1947-10	Experimental	1947-10	1947-10	1947-10	High-velocity anti-air warfare
11	Model-11	Anti-air warfare	1947-11	1947-11	Experimental	1947-11	1947-11	1947-11	High-velocity anti-air warfare
12	Model-12	Anti-air warfare	1947-12	1947-12	Experimental	1947-12	1947-12	1947-12	High-velocity anti-air warfare
13	Model-13	Anti-air warfare	1947-13	1947-13	Experimental	1947-13	1947-13	1947-13	High-velocity anti-air warfare
14	Model-14	Anti-air warfare	1947-14	1947-14	Experimental	1947-14	1947-14	1947-14	High-velocity anti-air warfare
15	Model-15	Anti-air warfare	1947-15	1947-15	Experimental	1947-15	1947-15	1947-15	High-velocity anti-air warfare
16	Model-16	Anti-air warfare	1947-16	1947-16	Experimental	1947-16	1947-16	1947-16	High-velocity anti-air warfare
17	Model-17	Anti-air warfare	1947-17	1947-17	Experimental	1947-17	1947-17	1947-17	High-velocity anti-air warfare
18	Model-18	Anti-air warfare	1947-18	1947-18	Experimental	1947-18	1947-18	1947-18	High-velocity anti-air warfare
19	Model-19	Anti-air warfare	1947-19	1947-19	Experimental	1947-19	1947-19	1947-19	High-velocity anti-air warfare
20	Model-20	Anti-air warfare	1947-20	1947-20	Experimental	1947-20	1947-20	1947-20	High-velocity anti-air warfare
21	Model-21	Anti-air warfare	1947-21	1947-21	Experimental	1947-21	1947-21	1947-21	High-velocity anti-air warfare
22	Model-22	Anti-air warfare	1947-22	1947-22	Experimental	1947-22	1947-22	1947-22	High-velocity anti-air warfare
23	Model-23	Anti-air warfare	1947-23	1947-23	Experimental	1947-23	1947-23	1947-23	High-velocity anti-air warfare
24	Model-24	Anti-air warfare	1947-24	1947-24	Experimental	1947-24	1947-24	1947-24	High-velocity anti-air warfare
25	Model-25	Anti-air warfare	1947-25	1947-25	Experimental	1947-25	1947-25	1947-25	High-velocity anti-air warfare
26	Model-26	Anti-air warfare	1947-26	1947-26	Experimental	1947-26	1947-26	1947-26	High-velocity anti-air warfare
27	Model-27	Anti-air warfare	1947-27	1947-27	Experimental	1947-27	1947-27	1947-27	High-velocity anti-air warfare
28	Model-28	Anti-air warfare	1947-28	1947-28	Experimental	1947-28	1947-28	1947-28	High-velocity anti-air warfare
29	Model-29	Anti-air warfare	1947-29	1947-29	Experimental	1947-29	1947-29	1947-29	High-velocity anti-air warfare
30	Model-30	Anti-air warfare	1947-30	1947-30	Experimental	1947-30	1947-30	1947-30	High-velocity anti-air warfare
31	Model-31	Anti-air warfare	1947-31	1947-31	Experimental	1947-31	1947-31	1947-31	High-velocity anti-air warfare
32	Model-32	Anti-air warfare	1947-32	1947-32	Experimental	1947-32	1947-32	1947-32	High-velocity anti-air warfare
33	Model-33	Anti-air warfare	1947-33	1947-33	Experimental	1947-33	1947-33	1947-33	High-velocity anti-air warfare
34	Model-34	Anti-air warfare	1947-34	1947-34	Experimental	1947-34	1947-34	1947-34	High-velocity anti-air warfare
35	Model-35	Anti-air warfare	1947-35	1947-35	Experimental	1947-35	1947-35	1947-35	High-velocity anti-air warfare
36	Model-36	Anti-air warfare	1947-36	1947-36	Experimental	1947-36	1947-36	1947-36	High-velocity anti-air warfare
37	Model-37	Anti-air warfare	1947-37	1947-37	Experimental	1947-37	1947-37	1947-37	High-velocity anti-air warfare
38	Model-38	Anti-air warfare	1947-38	1947-38	Experimental	1947-38	1947-38	1947-38	High-velocity

[illegible]